vol 18 no 10 OCTOBER 61

American Journal of Hospital Pharmacy

official publication of the American Society of Hospital Pharmacists

FORMERLY The BULLETIN

PATTERNS OF SPECIALIZATION IN HOSPITAL PHARMACY EDUCATION

SIMPLICITY in the administration of TB drugs

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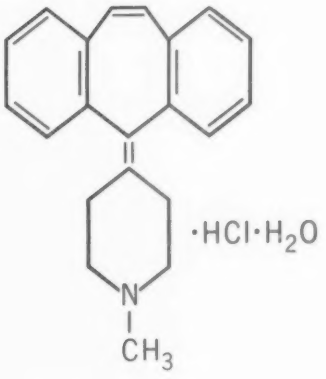
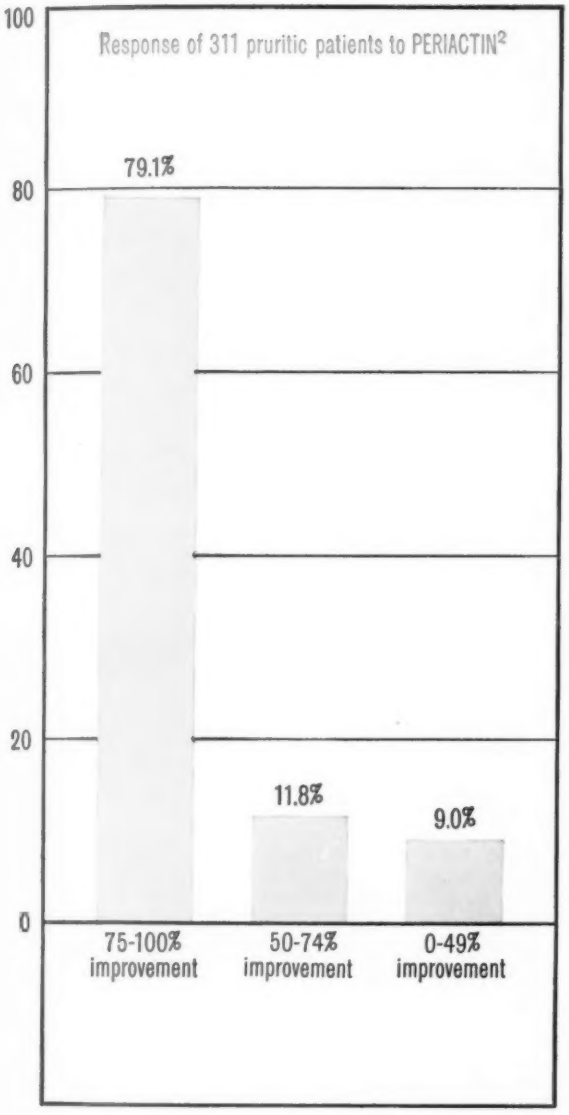


CHEMISTRY

PERIACTIN hydrochloride cyproheptadine hydrochloride is a white, crystalline solid, soluble in water to the extent of about 4 mg. per cc. It is the hydrochloride monohydrate of 1-methyl-4-(5-dibenzo-[a, e]-cycloheptatrienylidene)-piperidine. The empirical formula is $C_{21}H_{21}N \cdot HCl \cdot H_2O$ and the structural formula is as shown on the left.



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• Although histamine release is an important aspect of allergic manifestation in man, the effects of this substance do not account adequately for many of the allergic reactions observed. Cyproheptadine has been shown to have some antiallergic properties that are in addition to those demonstrated by compounds with only antihistamine activity.

• "Two well known antihistaminic drugs...were chosen as well as cyproheptadine [PERIACTIN], an experimental substance with anti-serotonin and anti-histaminic activity. Given orally in moderate therapeutic doses, only the last drug [PERIACTIN] led to a suppression of the whealing responses and the capillary damage demonstrated by the bluing reaction*, following the intradermal injections of histamine, serotonin...."[1]

• PERIACTIN has an interesting pharmacologic profile, in that its activity as a serotonin and histamine antagonist is comparable to the individually most active known substances with such activity.

• Not a phenothiazine. Clinical experience with more than 4,000 patients. Clinical reports have not indicated evidence of jaundice, agranulocytosis, parkinsonism.

• Has a high order of antipruritic activity in pruritus associated with such conditions as: angioneurotic edema, urticaria, dermatitis, neurodermatitis, neurodermatitis circumscripta, eczema, eczematoid dermatitis, drug reactions, poison ivy, neurotic excoriations, sunburn, chickenpox, insect bites, pruritus ani and vulvae.[5-16]

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*A blue dye was given intravenously to visualize leakage of plasma proteins resulting from increased vascular permeability caused by the test substances.

See next page for more detailed information on PERIACTIN

Additional Information on PERIACTIN

PERIACTIN hydrochloride cyproheptadine hydrochloride is a serotonin and histamine antagonist recommended primarily for the treatment of the pruritic dermatoses.

PERIACTIN is not a phenothiazine, does not contain sulfur or nitrogen in the tricyclic ring system, and clinical reports do not indicate any evidence of parkinsonism, dystonia, agranulocytosis, or jaundice connected with its use.

Dosage

Dosage must be individualized. The therapeutic range is 4 to 20 mg. a day, with the majority of patients requiring 12 to 16 mg. a day. An occasional patient may require as much as 32 mg. a day for adequate relief. It is suggested that dosage be initiated with 4 mg. three or four times a day and adjusted according to the size and response of the patient.

The dosage for children between the ages of 2 and 14 years is 6 to 16 mg. a day depending upon the size and response of the patient. The initial dosage is usually 2 mg. three or four times a day.

Since the effect of a single dose usually lasts four to six hours, the daily requirement should be given in divided doses three or four times a day or as often as necessary to provide continuous relief.

Precautions

The only side effect that appears frequently is drowsiness. Many patients who initially complain of drowsiness may no longer do so after the first three or four days of continuous administration. Drowsiness is often a desirable effect in patients with dermatitis and pruritus, since it tends to raise the threshold of perception and may decrease emotional tension caused by the disease.

Patients who become drowsy on PERIACTIN should be cautioned against driving a car or operating machinery or appliances requiring alert attention.

Dry mouth, dizziness, jitteriness, nausea, and skin rash have been reported in low incidence.

How Supplied

Tablets PERIACTIN hydrochloride cyproheptadine hydrochloride are supplied in bottles of 100. Each scored tablet contains 4 mg. of cyproheptadine hydrochloride.

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Additional information is available to pharmacists on request.

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Indications — Albamycin is indicated in the treatment of staphylococcic infections, particularly in patients sensitive to other antibiotics or in the infections in which the organism is resistant to other antibiotics and sensitive to Albamycin, and in urinary tract infections due to microorganisms resistant to other commonly employed antibacterial agents but sensitive to Albamycin — notably certain strains of Proteus.

Administration and Dosage — Capsules and Syrup: The recommended dosage in adults is 500 mg. every twelve hours or 250 mg. every six hours, continued for at least forty-eight hours after the temperature has returned to normal and all evidence of infection has disappeared. In severe or unusually resistant infections, 0.5 Gm. every six hours or 1 Gm. every twelve hours may be employed. The dose for children is 15 mg. per kilogram of body weight per day for moderately acute infections; this may be increased to 30 to 45 mg. per kilogram of body weight per day for severe infections. These doses may be administered on schedules similar to those for adults.

Parenteral: Intramuscularly—5 cc. of Albamycin solution may be used directly by slow injection deep into the gluteal muscle.

Intravenously — It is recommended that 5 cc. of Albamycin solution be diluted further with 250 to 1000 cc. of sterile injection solution of sodium chloride, Darrow's solution, or Ringer's solution and administered by intravenous infusion, or by diluting to a suitable quantity and administered by continuous drip infusion. **Do not use with dextrose solution.** When it is necessary to use a smaller volume intravenously, 5 cc. of Albamycin solution may be diluted to a minimum of 30 cc. with one of the above diluents and administered slowly over a period of five to ten minutes to avoid irritation of the vascular endothelium. The dosage for adults is 500 mg. Albamycin administered either intramuscularly or intravenously every twelve hours. For children with moderately acute infections, the dosage is 15 mg. per kilogram of body weight per day. The daily dosage should be administered in two divided doses at intervals of twelve hours. As soon as the patient's condition permits, parenteral Albamycin should be replaced with oral Albamycin therapy.

Side Effects — Albamycin is a substance of low toxicity but is capable of inducing urticaria and maculopapular dermatitis. Leukopenia, which was rapidly reversible, has been reported in approximately 1% of cases. All of these side effects disappear rapidly upon discontinuance of the drug. In a certain few patients, a yellow pigment has been found in the plasma. This pigment is a metabolic by-product of the drug which, however, may interfere with determination of bilirubin and icteric index. Its presence is not associated with abnormal liver function tests or liver enlargement.

Available — Albamycin, 500 mg., sterile, Mix-O-Vial.† Each Mix-O-Vial contains: 500 mg. Novobiocin (as novobiocin sodium), also 175 mg. Nicotinamide; 0.47 cc. N,N-Dimethylacetamide; 42.3 mg. Benzyl alcohol; 4.23 cc. water for injection. Albamycin Capsules. Each capsule contains: 250 mg. Novobiocin (as novobiocin sodium). Albamycin Syrup. 125 mg. per 5 cc. Each 5 cc. (one teaspoonful) contains: 125 mg. Novobiocin (as novobiocin calcium). Preserved with methylparaben, 0.075%, and propylparaben, 0.025%.

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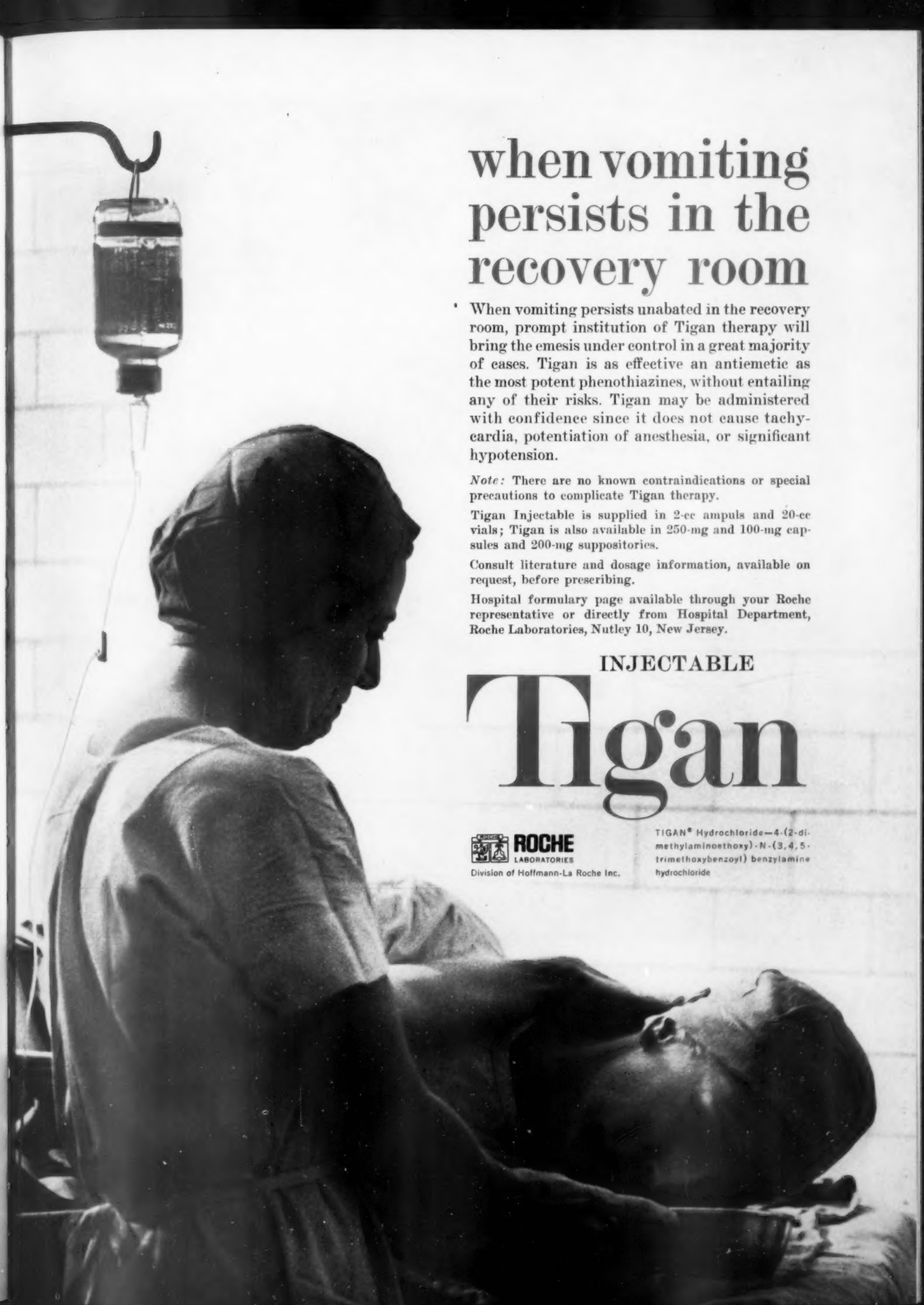

when vomiting persists in the recovery room

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Tigan Injectable is supplied in 2-cc ampuls and 20-cc vials; Tigan is also available in 250-mg and 100-mg capsules and 200-mg suppositories.

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Hospital formulary page available through your Roche representative or directly from Hospital Department, Roche Laboratories, Nutley 10, New Jersey.

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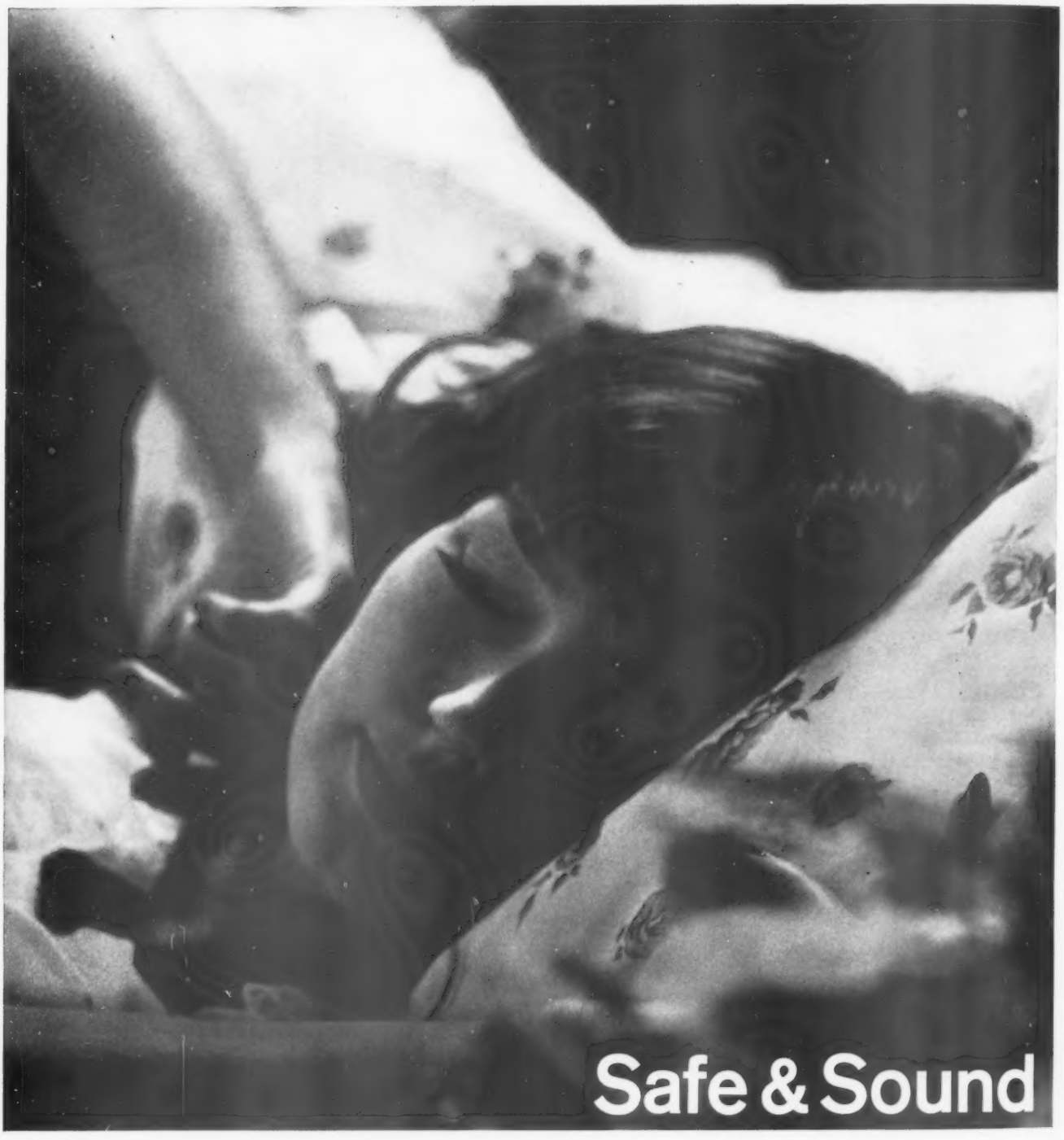

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Supplied: *Capsules,* 0.5 Gm. (blue and white). *Tablets,* 0.5 Gm. (white, scored), 0.25 Gm. (white, scored) and 0.125 Gm. (white).

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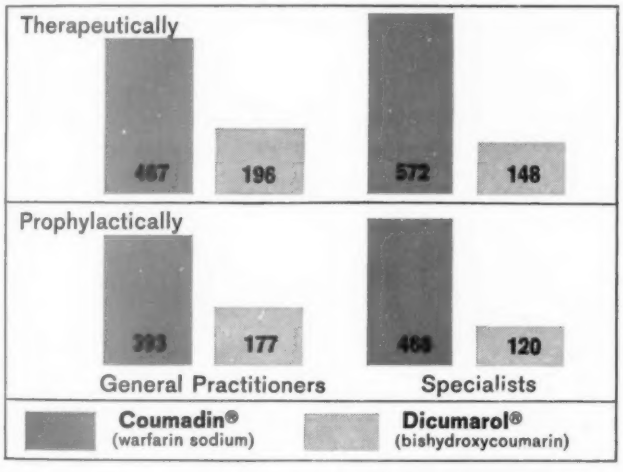
Since the anginal syndrome may be the herald of coronary thrombosis and myocardial infarction, it is of interest to note whether anticoagulants are being employed therapeutically and prophylactically in patients with angina.

The following graph, based on Endo Laboratories' *Anticoagulant Survey*, demonstrates the extent to which anticoagulation is used in *angina pectoris* among 3,092 general practitioners and 2,626 specialists prescribing Coumadin® most often, as compared to 1,689 general practitioners and 804 specialists using Dicumarol.®



Physicians Treating Angina Pectoris with Oral Anticoagulants—Therapeutically and Prophylactically

While the use of anticoagulants in angina pectoris was higher among specialists than among general practitioners, both used Coumadin® more frequently than Dicumarol.® Tabulation[1] of all replies to *Anticoagulant Survey* has shown that 61.4 per cent of responding physicians prescribed Coumadin® most often, as compared to 27.6 per cent who prescribed Dicumarol,® the *second* most frequently specified oral anticoagulant—a ratio of more than 2:1.

Anticoagulants Widely Used in Coronary Artery Disease

Because of the relationship of the anginal syndrome to *coronary atherosclerosis, coronary insufficiency,* and *impending myocardial infarction,* it is also interesting to note the percentage of physicians who reported their use of anticoagulants in *these* conditions.[1]

Indication	All Anticoagulants	
	Therapeutically	Prophylactically
Coronary Atherosclerosis	11.3%	10.2%
Coronary Insufficiency	29.2%	23.8%
Impending Myocardial Infarction	52.5%	39.9%

Percentage of Physicians Using Anticoagulants in Other Coronary Artery Disease

Anticoagulant Therapy May Prevent First Myocardial Infarction

The findings of *Anticoagulant Survey* are consonant with recently reported clinical experience demonstrating the value of long-term anticoagulation in angina pectoris. For example, on the basis of his results in general office practice, Nora[2] believes that *"long-term anticoagulation therapy not only reduces the probability of myocardial infarction in patients having sustained previous infarctions but is effective in preventing a first infarction in patients with angina."* The drug used by Nora was Coumadin.

"The most significant advantage is the great ease in maintaining patients in a therapeutic range. It has been rewarding to find, month after month, patients varying no more than three or four seconds in their prothrombin times on their established dosage of [Coumadin]."[2]

1. Littman, M. L.; Barrett, E. A., and Shapiro, S.: Scientific Exhibit, 110th Annual Meet., A.M.A., New York, N. Y., June 25-30, 1961. 2. Nora, J. J.: M. Times 89:502, May, 1961; idem: J.A.M.A. 174:118, Sept. 10, 1960.

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COUMADIN®

the proven anticoagulant for long-term maintenance

FOR ORAL, INTRAVENOUS OR INTRAMUSCULAR USE

Coumadin (warfarin sodium) is manufactured under license from the Wisconsin Alumni Research Foundation, and is supplied as scored tablets of 2 mg., lavender; 5 mg., peach; 7½ mg., yellow; 10 mg., white; and 25 mg., red, as well as in 50 mg. and 75 mg. single-injection units.

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the name now is simply... **Terramycin®**
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Cosa-Terramycin® Capsules	**Terramycin® Capsules***
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Cosa-Terrabon Pediatric Drops	**Terramycin Pediatric Drops**

and simpler names for these Terramycin-containing formulations:

Cosa-Terrastatin® Capsules	**Terrastatin® Capsules**
Cosa-Terrastatin for Oral Suspension	**Terrastatin for Oral Suspension**
Cosa-Terracydin® Capsules	**Terracydin® Capsules**

the name now is simply... **Tetracyn®**
TETRACYCLINE WITH GLUCOSAMINE

formerly named	*now named*
Cosa-Tetracyn® Capsules	**Tetracyn® Capsules***
Cosa-Tetrabon® Oral Suspension	**Tetracyn Syrup**
Cosa-Tetrabon Pediatric Drops	**Tetracyn Pediatric Drops**

and simpler names for these Tetracyn-containing formulations:

Cosa-Tetrastatin® Capsules	**Tetrastatin® Capsules**
Cosa-Tetrastatin for Oral Suspension	**Tetrastatin for Oral Suspension**
Cosa-Tetracydin® Capsules	**Tetracydin® Capsules**

the name now is simply... **Signemycin®**
TETRACYCLINE WITH GLUCOSAMINE-TRIACETYLOLEANDOMYCIN

formerly named	*now named*
Cosa-Signemycin® Capsules	**Signemycin® Capsules**
Cosa-Signebon® Oral Suspension	**Signemycin Syrup**
Cosa-Signebon Pediatric Drops	**Signemycin Pediatric Drops**

*Terramycin and Tetracyn Capsules without glucosamine are no longer available.

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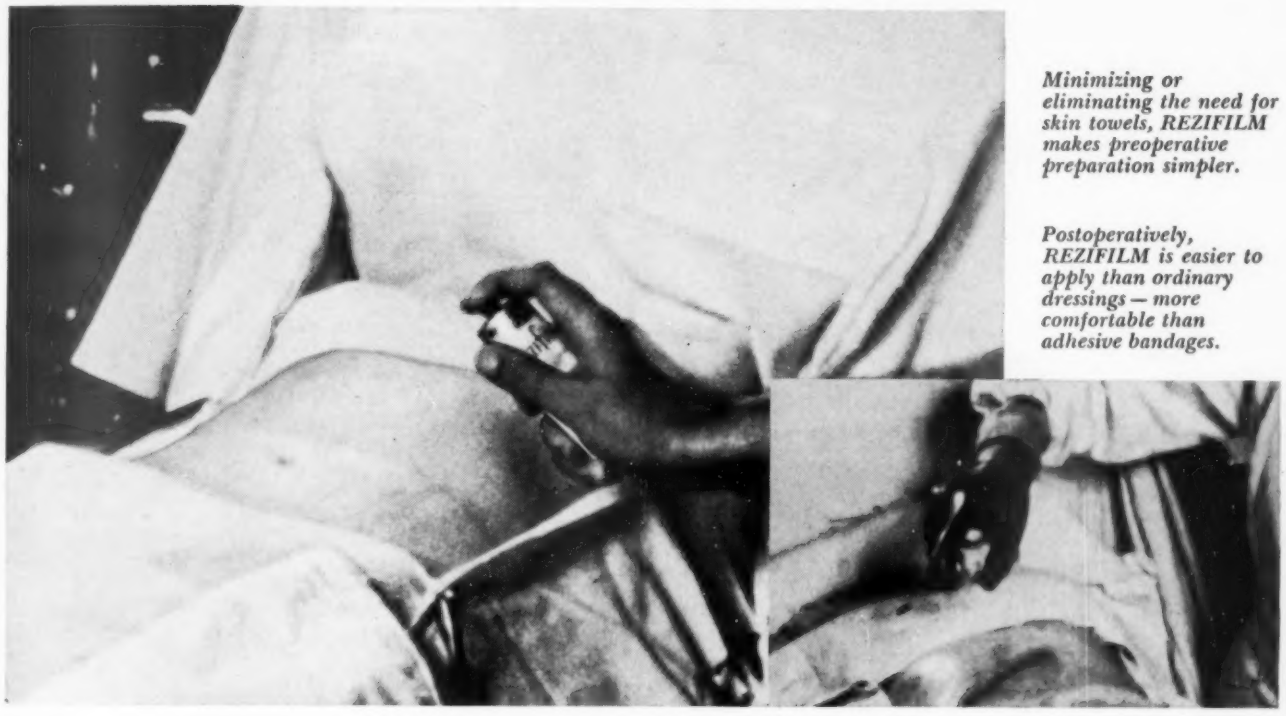

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References: 1. Eisenberg, G. M., Weiss, W., Spivack, A. P. and Flippin, H. F.: *Antibiotic Med. & Clin. Ther.*, **6**:594 (1959). 2. Thomson, J. E. M.: Clinical Research Notes, Vol. 3, #3, p. 1 (1960). 3. Kanof, N. B., and Blau, S.: *Arch. Dermatol.* **83**:503 (1961). 4. Bronwell, A. W.: Clinical Research Notes, Vol. 3, #3, p. 6 (1960).

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The safety and effectiveness of Adrenosem are proved by the administration of over 17 million doses in thousands of hospitals during the past 7 years. *There are no contraindications to Adrenosem at recommended dosage levels.*

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High-Potency
Vitamin B
Complex with
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Actual size of a capsule containing the B-Complex and liver in Surbex-T

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SURBEX-T™.. part of therapy when the water soluble vitamins are depleted or demands increased

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Before or after surgery.

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Thiamine Mononitrate (B_1)	15 mg.
Riboflavin (B_2)	10 mg.
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This contrasts with other methods of manufacture. Moisture is actually a part of the gelatin capsule, while sugar coatings must be applied with water.

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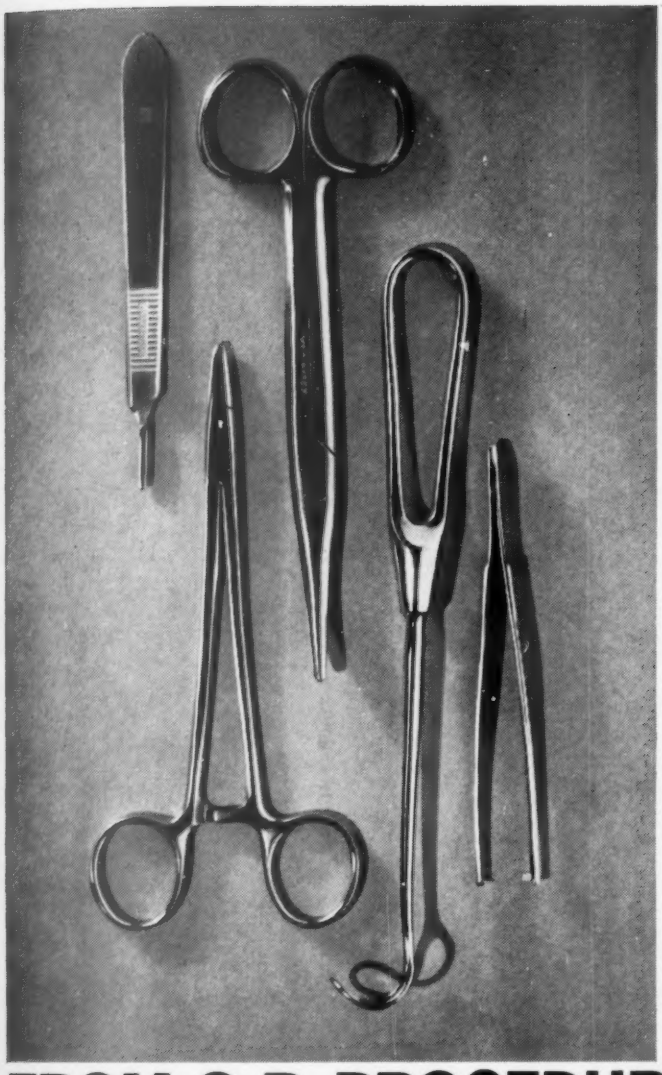

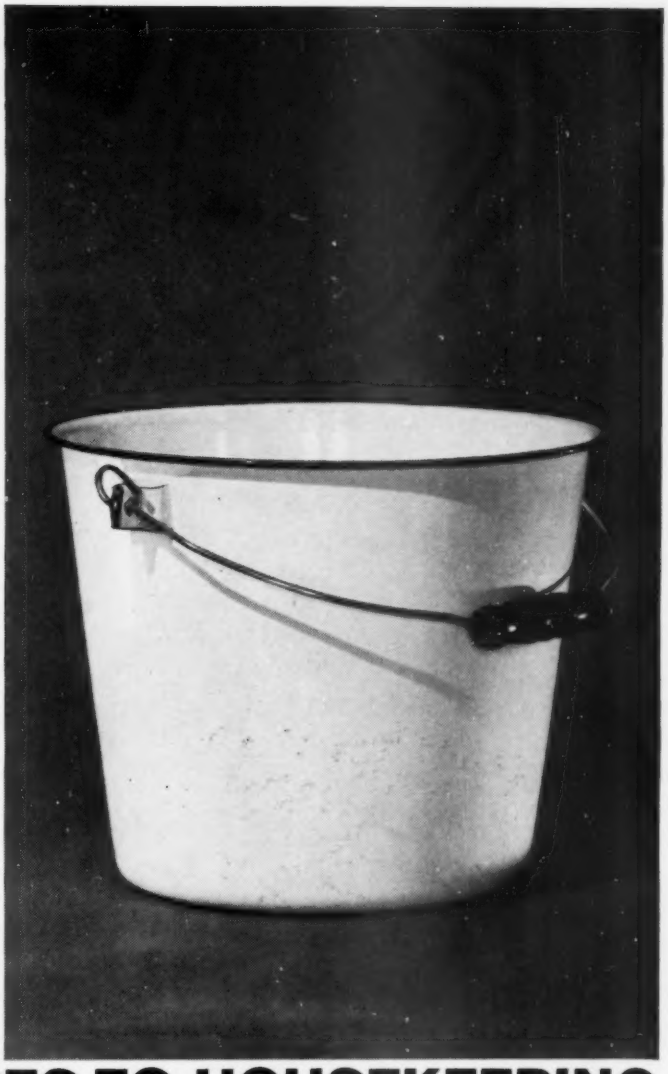

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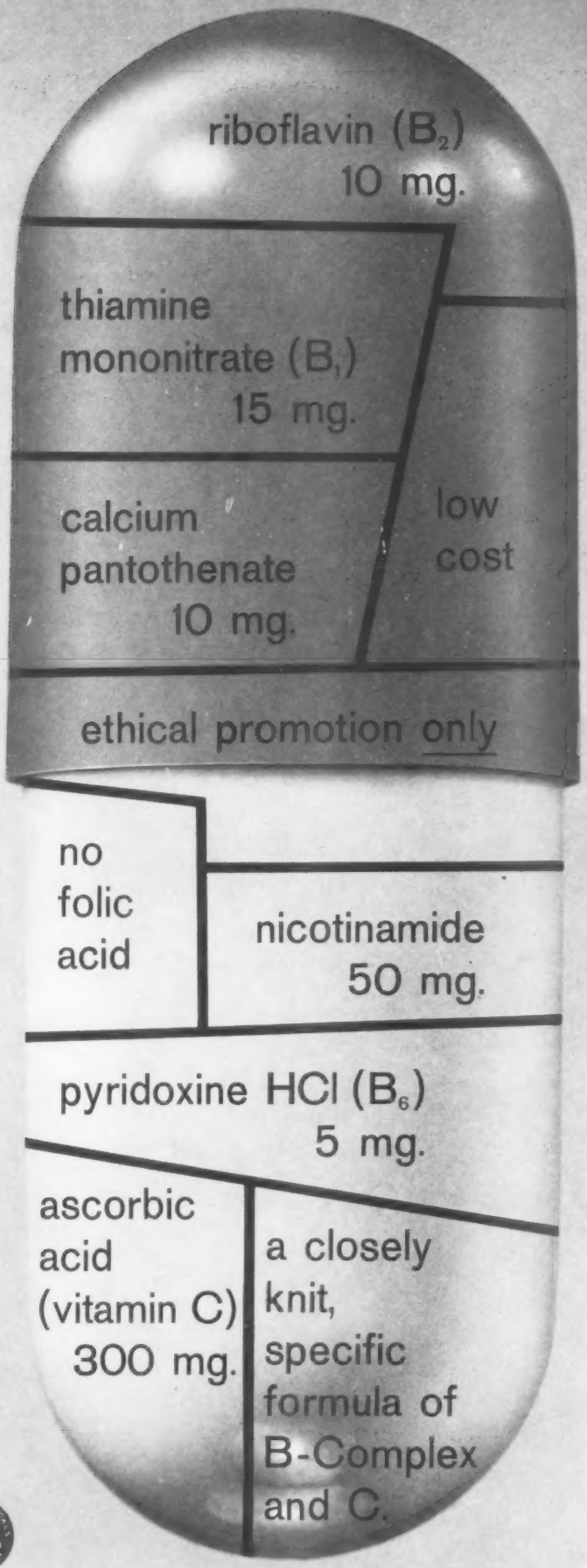
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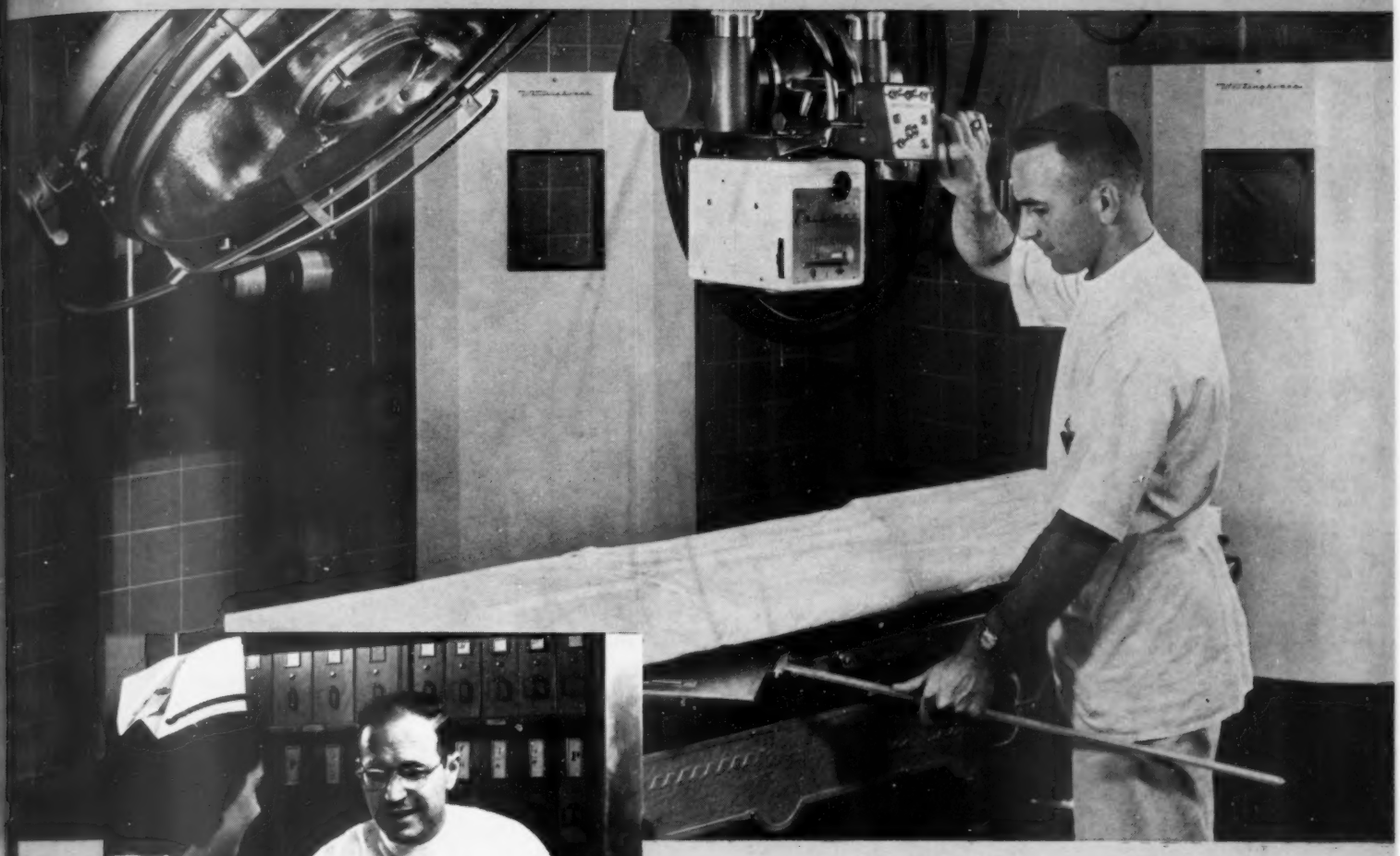

The Memorial Hospital in Wilmington, Delaware, with a 354-bed capacity treats over 31,000 patients yearly. Equipped with such facilities as the constant x-ray operating room pictured here, ultrasonic cleaning apparatus and one of the few radioisotope centers in the Middle Atlantic States, Memorial Hospital stands ready to serve every need in the heart of the great urban and industrial complex of the Delaware Valley.

Mr. Robert Simons, Director of Pharmacy Service, Memorial Hospital, shown dispensing a prefilled TUBEX Sterile Cartridge-Needle Unit. In addition to his role as Director of Pharmacy Service, Mr. Simons—as one of the founders of the Poison Information Centers—is also kept busy promoting this work not only in Wilmington but across the nation.

A Contribution to Modern Hospital Management

Mr. Simons comments: "The TUBEX Closed Injection System has been introduced into and is now being used in every department of our hospital. Of the 169,000 injections given annually here at Memorial Hospital approximately 50% are in TUBEX using either the prefilled cartridges or the empty graduated TUBEX Sterile Cartridge-Needle Units.

"This move to TUBEX was made only after a nurses' committee, acting upon the suggestion of our pharmacy committee, had carefully studied and recommended its adoption. We feel that the TUBEX system is the injection program most in keeping with the rigid quality and sterility requirements of good hospital management which we must maintain."

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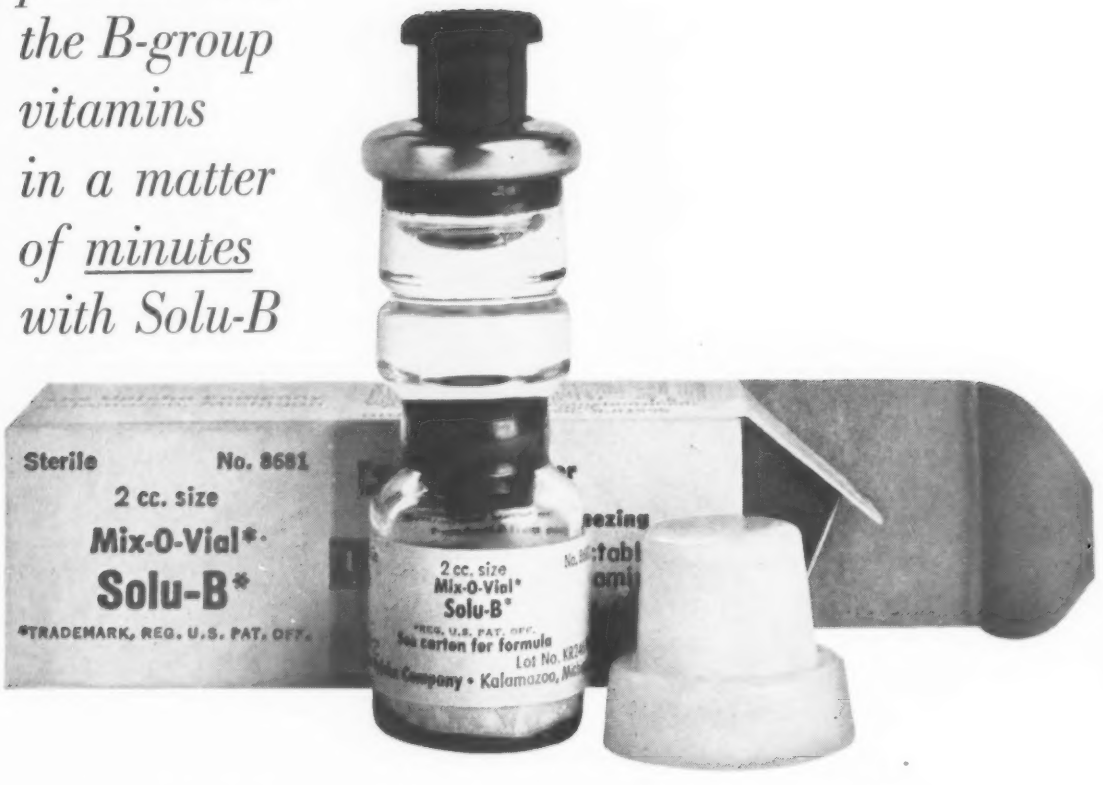
You can "saturate" patients with the B-group vitamins in a matter of minutes with Solu-B



Use this convenient form to eliminate preparation delay and the possibility of contamination.

Indications: Parenteral administration of the B vitamins is indicated in the treatment of severe B-group deficiencies and as a means of providing for the increased vitamin B requirements in alcoholics, in tissue injuries induced by trauma, burns or surgery, in thyrotoxicosis, and in febrile diseases. During the postoperative period, parenteral injection of the B vitamins has been recommended whenever anorexia or vomiting is present and the patient is receiving saline, glucose, amino acid, or protein infusion.

Dosage: The contents of the Solu-B Mix-O-Vial may be injected intramuscularly or intravenously one or more times daily. For patients receiving saline or glucose infusions intravenously, a convenient method of administering Solu-B Mix-O-Vial is to add the solution directly to the infusion solution.

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Each Mix-O-Vial contains:

Thiamine Hydrochloride	10 mg.
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Nicotinamide	250 mg.
Pyridoxine Hydrochloride	5 mg.
Calcium Pantothenate	50 mg.
Cyanocobalamin (B_{12})	25 mcg.
Methylparaben	2.34 mg.
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Water for Injection	1.8 cc.

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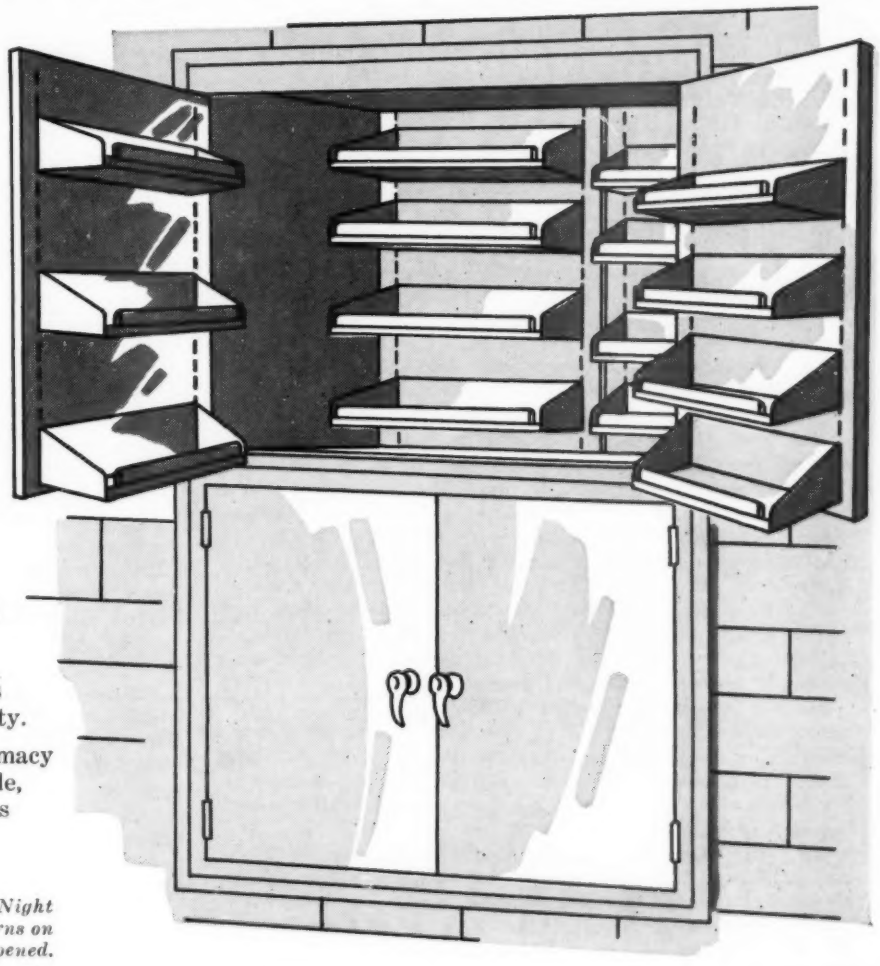

The Hospital Pharmacy Night Service Cabinet, built into the pharmacy wall, with doors opening into the pharmacy and out onto the hospital corridor, takes the place of a nighttime pharmacist. A standard supply of medicinals locked in the cabinet by the pharmacist during the day are available to the responsible person who keeps the keys for the locked corridor doors when the pharmacy is closed. She simply unlocks the cabinet, leaves her script or order, takes what she needs and relocks the cabinet. In the morning the pharmacist picks up the orders and restocks the unit. There is no longer any need to have the whole pharmacy with its complete stocks of narcotics and expensive pharmaceuticals opened when the pharmacist is not on duty.

The McKesson & Robbins Hospital Pharmacy NIGHT SERVICE CABINET is 35" wide, 60" high and 13" deep. Adjustable shelves give complete flexibility for storing all normal night pharmaceutical needs.

An optional exclusive feature of the Pharmacy Night Service Cabinet is an automatic switch which turns on a built-in "full-view" light when the doors are opened.

COMPACT Storage CABINET

...uses no more room to triple storage space. Movable and interchangeable trays lets you use *all* available interior space including the inside surface of the wide swinging doors...stores three times more than ordinary cabinets of the same size... keeps hospital supplies easy to see, easy to reach. McKesson COMPACT CABINET 35" wide, 16" deep and 30¼" high comes with 20 adjustable steel trays with clear plastic leading edges.

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...stores four times more in the same space. Gravity feed, inclined trays put fast-moving, prepackaged pharmaceuticals at your fingertips.

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HOSPITAL DEPARTMENT

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Southern California Society

The Annual Seminar in Hospital Pharmacy, sponsored by the Southern California Society of Hospital Pharmacists, was held at the University of California Conference Center, Lake Arrowhead, California, on August 18, 19 and 20, 1961. Highlighting the Seminar were speeches by J. Warren Lansdowne, president of the American Pharmaceutical Association, and Jack S. Heard, president of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

A.Ph.A. President J. Warren Lansdowne reviewed the current status of the pharmacy-antitrust litigation. Mr. Lansdowne emphasized the need for adequate legal counsel when questions involving a legality are discussed by professional pharmacy organizations. A check for $100 was presented to Mr. Lansdowne indicating the Southern California Society's whole-hearted support of the "Defend The Profession" drive.

"Hospital Pharmacy In The Soaring Sixties" was discussed by Mr. Heard. The increasing need for adequately trained hospital pharmacists was emphasized. Extension of the continuing educational program of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS was forecast by President Heard.

Mr. Al Mannino, hospital manager of Geigy Pharmaceuticals, discussed "Will Automation Replace The Hospital Pharmacist?" Training of hospital pharmacists must reflect current technological advancements in methods of drug development and distribution. Mr. Mannino presented a Geigy leadership award to Chester Bazel, president of the Southern California Society of Hospital Pharmacists.

Lectures on the psychopharmacologic revolution, newer cancer chomotherapeutic agents, compatabilities in parenteral solutions, nursing-pharmacy professional relationships, and medical terminology for the hospital pharmacist completed a valuable educational experience for the more than seventy Seminar registrants.

The University of California Conference Center, located on the shore of Lake Arrowhead, high in the San Bernardino Mountains, provided a rustic atmosphere with excellent food and comfortable accommodations. Registrants enjoyed fine recreational facilities, and a congenial Saturday social event which helped round out their educational weekend.

Seminar activities of the Southern California Society of Hospital Pharmacists help support the Sister Junilla Scholarship Fund. This fund provides grants of $100 to outstanding students majoring in hospital pharmacy at the School of Pharmacy, University of Southern California.

Members of the Southern California Society met on July 12 at the Long Beach Community Hospital in Long Beach. Mr. Charles F. Forbus, legal counsel for the Southern California Council of the California Hospital Association, spoke on the "Legal Aspects of Hospital Pharmacy." The program also included a discussion of the clinical uses and evaluation of Staphcillin by Dr. Jerry Schumaker of the UCLA Medical Center.

Business transacted included approval of a contribution of $100.00 to the "Defend the Profession" campaign and acceptance of Miss Joyce Nautel as an associate member.

Treasurer Frank Gianetti of the Southern California Society presents a check for the "Defend the Profession" campaign to A.Ph.A. President Warren Lansdowne. Looking on are ASHP President Jack Heard (left) and Chester Bazel, (right) president of the Southern California Society

Maryland Association

The Maryland Association of Hospital Pharmacists held a one day seminar at the Walter Reed Army Institute of Research, Washington, D.C., Thursday, September 14, 1961. Sponsored jointly by the Maryland Association of Hospital Pharmacists and Pfizer Laboatories, the meeting was attended by more than 130 persons including hospital pharmacists and pharmacy residents and interns. Mr. Robert A. Statler, pharmacy specialist with the Veterans Administration Central Office, Washington, D.C., presided during the seminar.

The participants were welcomed by Colonel Conn L. Milburn, Jr., director and commandant of Walter Reed Army Institute of Research. Greetings were also extended by E. W. Nollau, president, Maryland Association of Hospital pharmacists; Captain Lewis C. Miner, chief, pharmacy service, Walter Reed General Hospital and Don Pendas, professional programs manager, Pfizer Laboratories, Brooklyn, New York.

Lieutenant Colonel Donald L. Howie, MC, USA, assistant chief, Division of Medicine W.R.A.I.R., presented an interesting discussion on the "Current Status of Cancer Chemotherapy."

"Pharmacy Service in Government Activities" was the subject discussed by a panel of outstanding pharmacists from the headquarters and hospitals of various agencies in the Washington area. The practice of Pharmacy in the Army was presented by Colonel Ralph D. Arnold, MSC, USA, pharmacy consultant to Surgeon General and Captain Lewis C. Miner, MSC, USA. Opportunities in the Public Health Service were discussed by Dr. George F. Archambault, pharmacist director, P.H.S., Liaison Officer to Surgeon General and Milton W. Skolaut, Chief Pharmacist, Clinical Center, National Institutes of Health. This was Dr. Archambault's first public meeting since the announcement of his election to the presidency of the American Pharmaceutical Association for the 1962-63 term. A standing ovation was accorded this distinguished government pharmacist. Captain Ivan Grimes, MSC, USAF, discussed pharmacy service in the Air Force. Vernon O. Trygstad, director, Pharmacy Service, Veterans Administration, and past president of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, and Mr. James B. Low, chief pharmacist, VA Hospital, Washington, D.C., presented the picture of pharmacy in the Veterans Administration. The status of pharmacy service in the Navy was discussed by Captain Claude V. Timberlake, Jr., MSC, USN, head of Pharmacy Section—Naval Medical Corps and Commander R. F. Rigg, MSC, USN, pharmacy officer, Bethesda Naval Hospital. The panel concluded with Herman C. Fitzgerald, assistant chief pharmacist, discussing the operation of the pharmacy at D. C. General Hospital.

CONTINUED ON PAGE 24

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TRAVAD simplifies the enema procedure—18 inches of permanently attached flexible tubing allows easier self-administration in any conventional position.

The time proven TRAVAD formula* cleans thoroughly and consistently. In fact, a single TRAVAD unit is more effective than *two*, one quart tap water enemas. Yet the small volume of fluid (135 cc.) does not cause distention, cramps or hyperactive evacuation. TRAVAD can be administered, retained and evacuated in about 10 minutes.[1]

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Convenient TRAVAD is always ready to use, highly effective, and considerate of your patients. When ordering an enema for pre-examination or therapeutically, recommend TRAVAD.

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1. Weinstein, J.J.: unpublished manuscript.

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Sodium Dihydrogen Phosphate, 12 Gm. and Sodium Citrate, 10 Gm.
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CONTINUED FROM PAGE 22

During the luncheon which was served at the Walter Reed Army Medical Center Officers' Club, Joseph A. Oddis, director, Division of Hospital Pharmacy, American Pharmaceutical Association and executive secretary, AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, presented an interesting talk highlighting the growth and progress of the SOCIETY since its inception to its current status as the internationally recognized group representing the specialty of hospital pharmacy in the United States.

In the afternoon, Mr. Ola H. Bain, food and drug officer from the Bureau of Medicine, Food and Drug Administration, briefed the group on the Adverse Reaction Reporting Program.

Don Pendas introduced a recently released medical motion picture on Poliovirus Vaccine, Live, Oral (Sabin). This was followed by a short film entitled "Rx—Caution," pointing out the disgraceful conditions found in a New Jersey counterfeit drug firm. Mr. Statler, chairman of AMERICAN SOCIETY OF HOSPITAL PHARMACISTS' Committee on Project HOPE, introduced the film "Voyage of the SS Hope." This was an excellent documentary depicting HOPE's maiden voyage as a floating medical training-teaching center.

The day's program ended with a discussion by President Nollau of an "Anti-substitution" bill which is expected to be introduced into the Maryland State Legislature very soon.

Greater New York Chapter

The first meeting of the Greater New York Chapter of the American Society of Hospital Pharmacists for the 1961-62 session was held at St. Vincent Hospital, Westchester Branch, Harrison, on Tuesday, September 19, at 2:30 P.M. Sister Etheldreda presided.

The members wish to record their grateful appreciation to Sister Bernardine, president, for writing the history of the Chapter on its fifteenth anniversary. This is to be sent to the ASHP Committee on Historical Records.

Sister Donatus announced that the New York State Council of Hospital pharmacists will hold a meeting on Friday, October 13. In addition to the two delegates, all members are invited to attend. Also at that time, the executive committees of the Southeastern and the Greater New York Chapters will meet to discuss the possibility of a merger of both groups.

The meeting was devoted to a discussion of current trends and problems in pharmacy. The *News* and *Bulletin* of the A.Ph.A. provided the material for this discussion. Such topics as the antitrust suits, Defend the Profession, samples, mail order prescriptions, and poison control were reviewed. In addition, the New York State Laws governing samples, narcotics (especially in nursing homes) and filling out of State prescriptions were compared with federal regulations. It was agreed that the A.Ph.A. and ASHP *News* and *Bulletin* are a source of ready information.

Since the members will attend the Assembly in October, the next meeting was scheduled for November 14, at St. Mary's Hospital, Brooklyn. The meeting was adjourned at 4:30 P.M.

Akron Area Society

The thirteenth year of the Akron Area Society of Hospital Pharmacists was opened with its first meeting on September 12. Members met at the Akron City Hospital with Vice President Wayne Eaton presiding. Opening the meeting, he presented a review of the aims and objectives of the organization and announced officers for the current year. Reports included minutes of the May meeting and the treasurer's report along with announcement of the agenda of meetings for the coming year. Committee appointments were also made. Announcement of plans for other meetings during the year included a possible Lederle trip, a meeting with the Summit County Pharmaceutical Association at which time Dr. William Apple, secretary of the Americal Pharmaceutical Association will speak, the fall meeting of the Ohio Society which is scheduled for November 7 or 15, and the spring meeting which will be held in Toledo on April 3 and 4. Other announcements concerned the national meetings and a general discussion of the student project which is in its tenth year.

On the resignation of the president, Miss Ethel Baran, Mr. Wayne Eaton assumed the presidency and an announcement on filling the vacancy of vice president will be made in October.

Walter Reed Army Medical Center played host to the Maryland Association of Hospital Pharmacists at its annual hospital pharmacy seminar on September 14. Here Capt. Lewis C. Miner, chief of Walter Reed General Hospital's pharmacy service (left) and Col. Conn L. Milburn, director and commandant of the Research Institute (second from right), welcome Maryland Association's President E. W. Nollau (second from left) and Veterans Administration specialist Robert Statler (right) who presided over the seminar

Oregon Society

Members of the Oregon Society met for the first meeting of the new year on September 13 at Providence Hospital in Portland. Representatives of hospital pharmacy from throughout the State were present with one member, Mr. George Rowley from Grant's Pass Hospital, driving 250 miles to attend the meeting. The program included a discussion on problems encountered in pediatrics by Dr. George A. Nash of the Children's Clinic in Portland. He emphasized the value of electrolytes and explained their use.

With President Roy Ward presiding, new committee appointments for the year were announced. Also, plans for participation in future meetings throughout the year were covered, including the Hospital Pharmacy Seminar which is to be held at Oregon State University in Corvallis on October 6 and 7, and the Association of Western Hospitals which will hold its 1962 meeting in Portland. Announcement was also made of dates for regular meetings of the Oregon Society.

Houston Area Society

The Houston Area Society of Hospital Pharmacists held a dinner meeting on Tuesday night, September 19, in the Garden Room at Kaphan's in Houston. Jack Farmer, president, was in charge of the meeting and presented a report on the Hospital Pharmacy Institute which he attended in Albany last June.

Ben Parma of Galveston, vice president and program chairman, announced plans for the October and November meetings. Pfizer Laboratories, hosts, presented a film, "The Next Step," on the Sabin oral polio vaccine.

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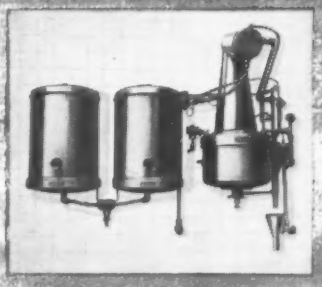

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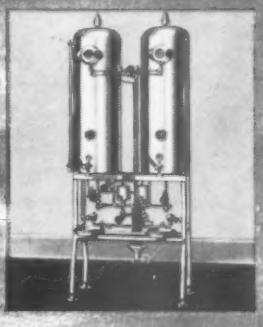

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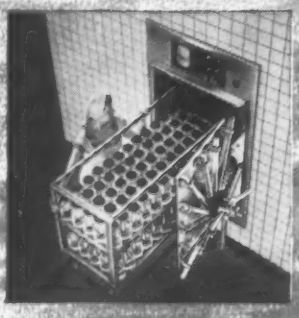

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Dear Sirs:

From the Pennsylvania Board

DEAR SIRS: A number of persons interested in pharmacy, have called my attention to your editorial entitled "Lessons From the Hahnemann Case," released in your July 1961 issue. It is most unfortunate that you, as a considered authority in pharmacy, and one who many look to for unbiased evaluation of problems in our profession, should author such an article.

Your statement could be either ill advised, or prejudiced, and could even be motivated, when the actual facts exist and are other than you stated.

Articles such as this create an adverse and antagonistic attitude toward Pharmacy Boards, and give credence to those who desire to destroy the image of respect and dignity the Pennsylvania Board has attempted so diligently to build. The writer speaks with authority in this matter since he attended all the conferences this subject involved.

First, let me state that it was the attorneys representing Hahnemann Hospital who requested an *urgent* meeting of Board Officers and its Counsel from the Pennsylvania Justice Department. *They wanted a settlement!* This urgent request was made *only a few days prior to the scheduled hearing* in this case, which was to be heard by the Commonwealth (Dauphin County) Court. *The Pennsylvania Board of Pharmacy was prepared, ready and willing to go to trial.*

The formulary system was not involved, and this fact should be known to you as it is to others.

Enclosed is a copy of the legal brief that was to be filed with the Court in this matter. I will leave it to your judgement to decide whether we had a case or not. I tell you unequivocably, that our legal advice was favorable. We believe firmly, that action of the Board would have been sustained. Only after the Hahnemann Hospital accepted the regulations of the Board, prepared by our Counsel, did we agree to withdraw this matter.

The Pharmacy Board acted fairly, reasonably and judiciously in this entire proceeding, and since we closed this matter on a gentlemanly fashion, we do not desire to provoke further issue regarding same. You must be brought to realize that even though pharmacist D'Ambola could have been prosecuted under the criminal section of Pennsylvania Law according to advice of Board Counsel, nevertheless the Board in its effort to obtain compliance, proceeded under the civil statute, so the matter could be fairly and legally concluded.

In spite of the unwarranted and unprovoked attacks on our Board, particularly by Members of your organization, as well as others in hospital pharmacy, we did not take the criminal actions against D'Ambola, which were available to us. We had our personal reasons for this and most important, we are professional people. It would not serve any purpose, or pharmacy, were we to "lose our heads" or attempt "to get even." I hope we are all above that.

Finally, your editorial makes reference to some States which limit credit for experience gained in hospital pharmacies. If you are not aware, let me reiterate that we in Pennsylvania still have on our "books," a regulation which only gives 50% credit to apprentices, who obtain their internship in nospital pharmacies.

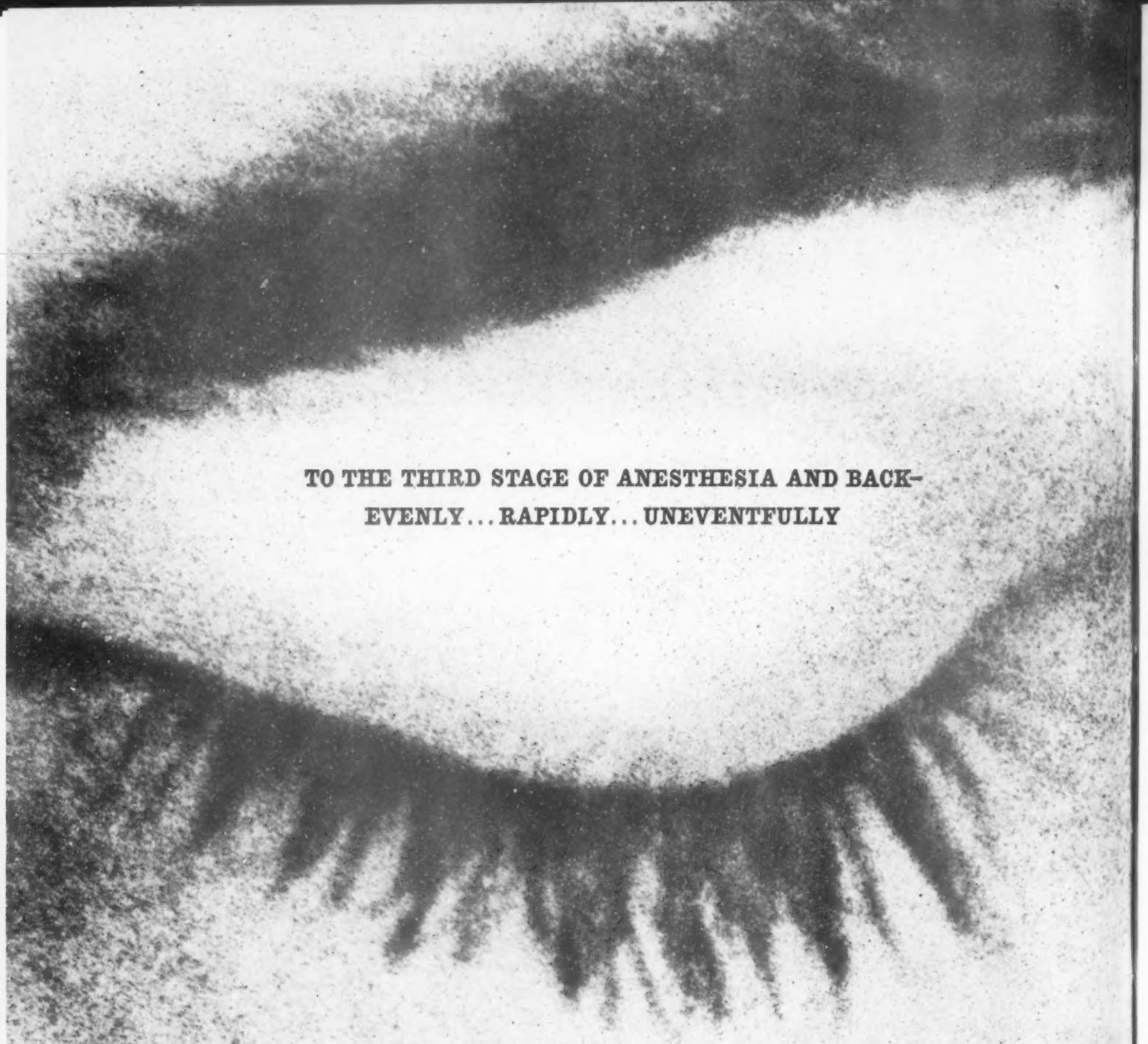
Nevertheless, to emphasize the Boards anxiety to show fairness, when the hospital pharmacy people called this to our attention, and evidence was produced to confirm same, the Board promptly waived this rule and extended full credit to such interns. This you did not acknowledge in your editorial! In closing, I am delighted to read that you do acknowledge that hospital pharmacies receive licenses equal to that issued to retail pharmacies. You base this as a reason why Boards should equate internship experience gained in hospital pharmacies as that obtained in retail pharmacies.

It would therefore follow that hospital pharmacies licensed by State Boards, would thus come within the jurisdiction of their respective Boards. This has been our contention, although the leadership of hospital pharmacy in Pennsylvania deny that our Board has any legal jursidiction to administer the Pennsylvania Pharmacy laws in any pharmacy located in a Pennsylvania hospital.

Our Counsel has advised us otherwise and this has now been sustained, and we doubt any hospital would relish testing this in any Court of Law. It is high time that hospital pharmacy gets off its "high horse" and begin to practice what they preach. A little bit of the "Golden Rule" is now in order.

SOL S. TURNOFF, *R. P.*

Pennsylvania State Board of Pharmacy
Harrisburg, Pennsylvania



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by DON E. FRANCKE

Education for Professional Practice

► A HOSPITAL PHARMACIST HAS AT LEAST FIVE major areas of responsibility, each of which calls for unique skills and requires specialized education and training. Within the modern hospital, the pharmacist functions as the manager of a department whose efficient operation is of great importance to the hospital; he is a consultant to the medical and allied staffs on matters related to drugs as well as a coordinator who implements decisions regarding them; in the area of pharmacy *per se* he is the authority on procurement, storage, manufacturing, control, dispensing and related activities; he is a teacher, instructing, formally and informally, students and practitioners of the allied health professions; and he is an investigator in the field of management methods and of professional and scientific problems.

No one pharmacist, however, will perform with equal capability within each of these areas. A pharmacist is an individual; pharmacy is a personal professional practice within which one has opportunities to develop his unique interests and skills. Some will obtain their greatest satisfaction from their consulting role while having little motivation, as an example, for teaching. Thus, they will minimize teaching and emphasize consulting. Others will direct their best efforts toward the areas of manufacturing, product development, control and investigation while tending to minimize management or teaching activities. Nevertheless, each pharmacist has a responsibility to himself, his profession, and his hospital to work to some extent within each of the five areas mentioned. There exists the need for minimum contributions in each of these areas which form the nucleus of the pharmacist's responsibility, though he may go far beyond the expected minimum in certain ones. The problem of defining these minimums is an important one.

If, for the sake of argument, we assume the pharmacist's educational background should prepare him to carry out responsibilities in the five major areas named, then the question arises as to the more desirable academic program to achieve these ends. We believe the Doctor of Pharmacy program has much to commend it, especially when the student enters this program in his first year at the college of pharmacy. If the student first completes the requirements for the Bachelor's degree and then enrolls in the Doctor's program he loses the advantage of the course sequence established for the latter program. Professor Brodie in his article "Patterns of Specialization in Hospital Pharmacy Education" (page 588) ably discusses several facets of this and related problems.

Hospital pharmacy will rise on the wings of pharmacists well-trained in mathematics, the physical and biological sciences, and in professional areas. Mathematics, including calculus and statistics, is an essential tool with which the quantitative approach to pharmaceutical science and technology expands new horizons at which the pharmacist, physician, and investigator meet in closer understanding and common endeavors. Quality courses in the physical and biological sciences form the bedrock for the pharmacist's professional courses. The professional courses supply the body of knowledge which is pharmacy's alone and upon which its existence as a profession rests. With these tools, then, the pharmacist can readily fulfill four out of the five responsibilities mentioned and be able to select one or more areas in which his contributions may be especially rewarding.

His educational tools sharpened, the pharmacist is ready for a meaningful internship program. Here he may apply his knowledge, develop his skills, grow in maturity and judgement, sort out his areas of greatest motivation and lay the groundwork for a richly satisfying professional life. And as long as he continues his practice he will continue to study and keep himself informed of professional and scientific advances related to his work. Education for professional practice is a continuous process.

PATTE

C J Lamb

PART ONE

The M.S. and Pharm. D. Programs

SPECIALIZATION

in hospital pharmacy education

► ACCORDING TO THE LAST ENROLLMENT data released by the American Association of Colleges of Pharmacy,[1] there are 26 member colleges offering M.S. (Master of Science) programs in hospital pharmacy education. Although this same report does not specifically indicate it, there are three institutions (University of California, University of Michigan, University of Southern California) offering Pharm. D. (professional degree of Doctor of Pharmacy) programs representing specialization in the area of hospital pharmacy. Thus, it is clear that the M.S. program is by far the more common program in hospital pharmacy education. In view of the strength of the report of the Pharmaceutical Survey,[2] the Audit of Pharmaceutical Service in Hospitals,[3] and the increasing interest shown by hospital pharmacists in the educational preparation for their specialty, a detailed discussion of the current M.S. and Pharm. D. programs in hospital pharmacy education seems appropriate at this time.

Before presenting the topics to be discussed, the author would point out, parenthetically, that the amount of time required for each program is the same since the M.S. program, in general, requires the equivalent of one year of course work following completion of a 5-year undergraduate program, and the Pharm. D. program provides for specialization in the fourth professional year superimposed on two years of general education. Internship training will not be discussed

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The above paper was submitted on request of the Editor of THE JOURNAL. It was originally scheduled for presentation at the 1960 Annual Meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

since each program includes provision for the equivalent of a one-year internship, either apart from or integrated with the academic requirements. The discussion will be built around the following topics: (1) provision for general education, (2) foundation in basic sciences, (3) specialization in hospital pharmacy, and (4) appropriateness of the degree. Frequent reference will be made to reports of the Committees on Curriculum and Hospital Pharmacy Education of the American Association of Colleges of Pharmacy (A.A.C.P.), since these reports reveal prevailing educational philosophy, perspective, and opinion. Tables 22, 23, and 24 in *The Pharmaceutical Curriculum*[4] will be used in some instances as reference programs for the 1-4, 2-3 and 2-4 programs of pharmaceutical education.*

General Education

The standard pattern of professional education in the health sciences, of which the 2-4 program of pharmaceutical education is representative, is generally accepted as providing ample time for the development of general education for practitioners in the various fields. In addition to developing general education during the preprofessional years, schools may continue to offer instruction during the years of professional study where they are located on a general university campus. The educational philosophy and perspective of a given faculty in the final analysis, together with matters of local concern, determine both qualitatively and quantitatively the dimensions of general education in a professional curriculum.

In analyzing two educational programs on the basis of general education, the all-important question is: Does a curriculum provide adequate time to develop an acceptable program in general education? The reference curricula cited above,[4] lists 0, 11 and 19 semester units of "general education electives" for the preprofessional years in the 1-4, 2-3 and 2-4 programs, respectively. Within this frame of reference, it seems reasonable to believe that the 2-4 curriculum, in general, will provide the time for a more acceptable program in general education than will either 5-year plan. In making this statement, the author recognizes individual differences that exist from one program to another with the same basic curricular design. He also recognizes that instances, no doubt, can be found in which failure to develop fully the general education potential in the 2-4 sequence can be demonstrated.

The reports of the Committee on Curriculum of the A.A.C.P. for 1959-60, 1960-61[5,6] are germane to this discussion of general education. The author shares the concern of the Committee regarding what seems to be

*1-4 represents one year of preprofessional study and four years of professional education; 2-3 represents two years of preprofessional study followed by three years of professional education; 2-4 represents two years of preprofessional study and four years of professional education.

too little general education in the Pharm. D. programs of the two California schools, but does not see this as justification for strong criticism of the 2-4 program of pharmaceutical education. In the report of 1959-60, the Committee shows considerable concern for the tendency that existed at that time in the 5-year curricula of 56 member colleges (Adam's survey) to minimize general education courses, in many instances in favor of professional electives. Thus, it would appear that the Committee is finding the same weakness in the 5-year as it does in the 6-year program. If the Committee seeks to alert pharmaceutical educators to the dangers that curriculum development of the past few years has created by neglect of general education, its objectives are commendable and it should be encouraged in its work. If, on the other hand, the Committee is using this same argument to support what appears to be an irresponsible attack on the 6-year program, its action may be suspected of prejudice since such viewpoint is not consistent with its own evaluation of the Adam's report concerning the 5-year program.

Foundation in the Basic Sciences

Two considerations are important when evaluating the basic science quality of the two programs: *first*, provision for the necessary courses of instruction, and, *second*, the sequence in which they occur. The biological sequence of courses will provide a useful illustration. In the reference programs for the 2-3 and 2-4 year curricula,[4] it will be noted that provision is made for vertebrate anatomy (including histology) and physiology in proper sequence although neither program provides for pathology. Blauch and Webster,[4] in support of their recommendation that pathology be an elective course, say that "pathology should greatly strengthen the background of the modern pharmacist and enhance his capacity for rendering public health service in the community." It seems almost incontrovertible to say that the hospital pharmacist needs on a day-to-day basis the professional understanding that instruction in pathology provides. Pathology makes possible concrete understanding of the diseased state and physiologic derangements which are of basic importance in an intelligent understanding of drugs, and it serves a useful function in the acquisition of a terminology that a pharmacy student would not otherwise obtain.

On the premise that pathology is a highly desirable course in the educational preparation for hospital pharmacy, its adaptability to the reference programs should be tested. In the 5-year program there is not adequate time to accommodate instruction in the three professional years, and if it is to be included, it must be offered in the graduate year. Not that instruction in pathology which occurs after pharmacology is totally undesirable, but the fact remains that when pathology is presented out of sequence, as it surely is in such an arrangement, maximal educational benefit is not apt to be gained. It is unlikely that many M.S. programs would even provide instruction in pathology among their course requirements, because of the need for specialty and elective professional courses. The Committee on Curriculum seems to support this point of view in principle.

The Pharm. D. program, on the other hand, provides opportunity for instruction in pathology in proper sequence as is done in the programs offered by the University of California and the University of Michigan. In one program, pathology is concurrent with the first semester of pharmacology instruction; in the other it precedes it.

Hospital Pharmacy Specialization

There is little doubt that either program will provide, at least minimally, the generally accepted hard-core requirements for specialization in hospital pharmacy. The Committee on Hospital Pharmacy Education in 1957[7] recommended hospital pharmacy administration, sterile and non-sterile manufacturing pharmacy, advanced pharmacology, and seminar, suggesting "that all three subjects could be offered to both graduates and undergraduates." Individual M.S. and Pharm. D. programs supplement the core subjects with what in most cases is a variety of supporting professional courses. Some of the M.S. programs will provide instruction in academic courses in the basic sciences. For example, Plein[8] suggests in the report of his recent survey that in addition to basic professional courses, students may select courses in chemistry, microbiology, anatomy, physiology, pharmacology, biochemistry, and others. These courses, by title, suggest instruction in the basic sciences, some probably at the initial level of exposure. If such is the case, it violates a basic principle of curriculum development, namely, that courses should be presented in an orderly and meaningful sequence. This is an inherent educational weakness of the M.S. program.

Degree

The Pharmaceutical Survey supported its recommendation of a 2-4 program of pharmaceutical education on the basis of both educational and professional worthiness. In other words, the program was in keeping with established programs of professional education in the health sciences. The degree structure was not only in keeping with that in other professional programs, but one that would place pharmacy before the public on a professional level equivalent to that of other members of the health professions. Although the Survey report did not discuss the relative merits between the doctorate and the master's degree in professional education, it would seem appropriate at this time to

analyze the two as they relate to hospital pharmacy education. In so doing, it is desirable to study the evolutionary development of higher education in the United States to determine what the two degrees have represented, educationally speaking, in the past and what they stand for today.

Degree Programs in American Education

The Master's Degree (magister artium) was introduced to the American college of colonial times and was patterned essentially after its use at Cambridge and Oxford Universities in England. The British universities granted the master's degree "in course" to those who remained on the rolls after completing the requirements for a lesser degree, requiring no additional educational attainment whatsoever. At Harvard College this same practice was in effect as late as 1825. Three years after receiving the bachelor's degree from Harvard, every recipient automatically received the master's degree upon payment of a fee. This was a common practice among other colleges of the times.[9] When reform took place in the American university during the 1870's, the master's degree became an earned degree. Yale granted its first earned M.A. in 1876. In 1890 seventy such degrees were awarded in the United States, and by 1930 the number had increased to 14,495. As early as 1905, concern was held for the fact that the master's degree had come to stand for so many things, including that of an honorary degree.[10] In 1932 a committee of the American Association of University Professors expressed concern with the status of the M.A. degree,[11] and in 1957 a Committee on Policies in Graduate Education in a report to the American Association of Graduate Schools commented that the M.A. in many institutions was still a "consolation" degree or a "quick" degree awarded for superficial performance.[12]

Today, the master's degree has a wide variation of educational significance depending upon the institution granting the degree, as well as upon differences existing among departments of the same institution. The degree is variously regarded as: suitable recognition for a year of genuine graduate study; recognition for a year of advanced undergraduate study; a "consolation" award for those who fail to attain the doctorate; a preliminary step toward the Ph.D. degree. In some fields it is awarded as the first professional degree, such as M.S. L.S. (library science) and M.P.H. (public health). In other fields it is a second professional degree, M. Arch. (architecture) and M.S. Pharm. (pharmacy).[13]

The master's degree usually requires a minimum of one academic year of course work. Some institutions require two years. If a research project and thesis are required, the student is almost automatically obligated to a two-year program. The master's in some instances is an academic graduate degree, in others it is a professional degree. The fact remains that master's degrees have increased so in numbers, as have the number of institutions granting them, that "many educators feel that this degree has lost the status and distinction which should differentiate graduate from undergraduate studies."[14]

From the above discussion it is clear that the master's degree does not represent a particularly well-defined academic or professional accomplishment. In no sense does it connote accomplishment as does, for example, the Ph.D. degree, which universally stands for a high order of scholarship and original research in a recognized area of knowledge. Attempts have been made to make the master's degree one that represents a recognized accomplishment in preparation for careers in secondary education, but, today, there is simply no generally accepted interpretation to the master's degree in this field. (NOTE: Some twenty institutions in the United States have inaugurated 3-year programs for the M.A. as a means of strengthening the degree according to Rosenhaupt [*Sat. Rev.*, Sept. 16, 1961]).

The Doctor of Pharmacy degree, although recently introduced into contemporary pharmaceutical education, is in reality not "new." In 1895 the "three year course leading to the degree of Doctor of Pharmacy (P.D.) was instituted. . ." at the Philadelphia College of Pharmacy, and "was continued to 1915. . ." The last professional doctorates in pharmacy to be awarded by this institution were granted in 1917-18.[15] In 1918, a report delivered by Koch to the Executive Committee of the American Conference of Pharmaceutical Faculties*[16] stated that "the Doctor of Pharmacy degree (is conferred) by three schools for three years, by one for four years, by three schools for six years, and by one for a seven years' course. . ." The by-laws of the American Conference of Pharmaceutical Faculties made mention of the Doctor in Pharmacy for the first time in 1924. At that time, a minimum requirement of "at least a four-year college of pharmacy course" was stated.[17] Since July 1, 1938 no mention has been made of formal requirements for the professional doctorate in pharmacy until the recommendations of the Pharmaceutical Survey were issued. The early Doctor of Pharmacy degrees were educationally "cheap," and they were destined to failure because of lack of adequate educational substance. Rather than developing a sound program justifying a professional doctorate, colleges of pharmacy directed their curriculum development to the baccalaureate degree, through first the Graduate in Pharmacy (Ph.G.) degree and then that of Pharmaceutical Chemist (Ph.C.). One can only speculate as to what course pharmacy might have taken had pharmaceutical education in the early 20th century pursued a strong professional educational program

*Predecessor of the American Association of Colleges of Pharmacy.

rather than one similar to such fields as chemistry, microbiology, etc., in which the baccalaureate degree was conventional.

During the close of the 19th century, the M.D. degree was also a "cheap" degree in medical education.[18] There were 160 schools in the United States awarding the M.D. degree in 1890. This number dropped to 126 during the next ten years due to, among other things, the unfavorable publicity that organized medicine heaped on low-standard medical schools. This was the status of medical education when the Flexner Report was made in 1910, as a result of which medical education took the position of leadership in professional education in the United States.

Training by apprenticeship and by simple empirical techniques was to give way to education based on a formal program of study. Students were to attend established centers of learning to study the principles upon which the practice of the profession was based. Physicians were to master the basic preclinical sciences of medicine before learning the techniques of diagnosis and treatment. Hospital facilities were to become a part of the medical school so that integration between the theory and practice of medicine might be achieved. From these evolutionary developments came a pattern of post baccalaureate education for the professions in the United States, one which has since had wide application among the health sciences. Health science education in the United States is structured, in general, so that the basic program includes general education, usually a minimum of two years, followed by four years of professional study leading to a professional doctor's degree. This is the pattern of education for medicine, dentistry, optometry, chiropody and veterinary medicine. It was to this pattern of professional education that the recommendations of the Pharmaceutical Survey were directed in 1950[2] and the Committee on Curriculum of the A.A.C.P. in 1950.[19]

Summary

The Pharm. D. program of education for hospital pharmacy thus appears to be educationally superior to the M.S. program when conventional academic yardsticks are applied to the two. It provides adequate time for developing the elements of general education necessary for broadening the base of professional education; it provides for more complete coverage of basic science areas and in proper course sequence; it provides for adequate instruction in the required professional areas and for suitable professional elective courses, and it provides a suitable degree that meets both educational and professional needs. One must then seek explanations as to why the M.S. degree is the overwhelming choice in hospital pharmacy education today. The most obvious and direct conclusion is the refusal of American pharmacists and the A.A.C.P. to support the recommendations of the Pharmaceutical Survey and the Committee on Curriculum of the college association for a 2-4 program of pharmaceutical education. While denial of a conventional pattern of professional education for pharmacy provides a partial answer to the query, it fails to reveal other factors that should be identified.

PART TWO

Defense of the Pharm. D. Program

► GRADUATE EDUCATION IN HOSPITAL PHARMACY originated about 1937 by Dean Edward Spease of Western Reserve University. The four-year baccalaureate program of that day would not provide time for professional specialization. It was only natural that specialization in hospital pharmacy would follow the lines of classical graduate study, leading to the master's degree and in time to the Ph.D. degree in selected instances. During the next twenty years, hospital pharmacy became an established professional specialty, benefiting from the impetus of the invigorating leadership supplied by the newly formed AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. It is not surprising that the A.A.C.P. lagged a bit in displaying an active interest in the affairs and needs of the new specialty, nor is it surprising, looking in retrospect, that the implications

carried by the Society's classification of the internship as "academic" and "non-academic" delayed the fusion of common interests. It was only in 1959[20] that a Joint Committee on Hospital Pharmacy Education was authorized by the A.A.C.P. and the ASHP, bringing educators and practitioners together on a continuing basis for study of educational matters. It is not surprising then to find evidence of considerable confusion resulting from the numerous philosophies of education for hospital pharmacy and from the variety of M.S. programs presently being offered.

During the mid 1950's when education for hospital pharmacy came into focus, it was generally agreed that, because of the limitation of time in the four-year curriculum, only an orientation to hospital pharmacy could hope to be achieved. In 1957 the Committee on Hospital Pharmacy Education[7] recommended ten units (manufacturing pharmacy, hospital pharmacy management, and hospital pharmacy seminar) as constituting suitable "professional electives in the last two years of the five year curriculum. . ." The following year the Committee expressed "the feeling that the specialized area of hospital pharmacy requires more training than the present four year course does provide or that the five year course will provide."[21] Educational philosophy obviously was directed toward at least one additional year of study, exclusive of the internship.

Educational Needs of Hospital Pharmacists Not Clear

Beyond this point there certainly is no agreement of educational opinion concerning the needs of the specialist in hospital pharmacy. Weaver,[22] writing independently although then chairman of the Committee on Hospital Pharmacy Education, commented that there "does not seem to be any unanimity of feeling about the specific nature of graduate education in this field. . . Basically the need for advanced education is 'felt' by hospital pharmacists and educators alike, but unfortunately, there is no firm documentation of this impression."

It has been pointed out, and accurately stated, that there exists a broad spectrum of need among hospital pharmacists, depending upon both position and institution. The A.A.C.P. Committee[21] in 1958 commented that "in some instances, training at the doctorate level" (Ph.D. implied) is required. The author concurs with this statement, but hastens to add that the Ph.D. pharmacist will have limited opportunities for placement in hospitals, and may find more economically attractive employment in education and industry than he does in the hospital. During the next fifty years or so, Ph.D. trained personnel may very well be required for key positions in hospital pharmacy practice. If that time should come, it will be due, among other things, to the development of a research function within the pharmacy beyond that which exists today. Then, administrative personnel in hospital pharmacy will be expected to be competent in both research and professional skills.

The present-day needs of hospital pharmacy and those for the foreseeable future require people with highly specialized *professional* training. This is certainly confirmed in reports[23] from the Audit of Hospital Pharmaceutical Service in Hospitals. Hospital pharmacy practice differs from general pharmacy practice largely because of administrative characteristics on one hand and the regularity of integrated activities with members of the other health professions on the other. The practitioner is engaged in a professional practice whose specialized needs are to be acquired through professionally oriented education and training. The Committee of the A.A.C.P.[21] comments that some of the M.S. programs are professional degree programs; others are academic in nature. Some are terminal programs; others are intended as preparatory to Ph.D. training. Most master's programs in hospital pharmacy are probably, in fact, terminal programs. If the master's degree program is considered to be a professional one as it is in some institutions, the professional doctorate program is, by both educational and professional standards, the more desirable of the two. If the master's program is an academic program, one must recognize that, in addition to the shortcomings already mentioned, it does not achieve that which its nature implies. For example, the time permitted for research and thesis work is so limited that the student achieves little more than an introduction to the scientific method of investigation. Furthermore, what experience he has obtained in experimentation in all probability has been achieved at the expense of much needed instruction in such areas as pharmacology, pathology and orientation in medicine, all of which contribute to fulfilling daily needs in hospital pharmacy practice. This does not imply that the hospital pharmacist does not need some experience in resolving problems, keeping data, report writing, etc. Experience has shown that a surprising degree of orientation to experimentation can be achieved in a course in drug product formulation included by the author[24] in a suggested program of hospital pharmacy specialization within the framework of a Pharm. D. program.

The above discussion in no way is intended to belittle the master's degree programs in hospital pharmacy. These programs evolved easily from the four- and five-year programs of pharmaceutical education, once it was established that specialized education and training were indicated. They represent an indefinite accomplishment in education at the post baccalaureate level, as in no way do they stand for particular achievement, either professionally or academically. Lat-

iolais[25] has emphasized recently the strategic position of hospital pharmacy in relationship to what he designates as "professional survival" for pharmacy. Few can disagree with his main thesis that hospital pharmacy practice, in the span of twenty years or so, has pulled out the deep-seated spiritual purpose of pharmacy from the complex of contemporary pharmacy practice. What growth hospital pharmacy will make during the latter part of the 20th century is purely conjectural at this point, but a "factor that. . .will be dominant in the continued growth of hospital pharmacy will be education or lack of it."[26]

Academic vs Professional Interests

Undoubtedly, a basic issue in the present discussion lies in a deep-seated conflict that so often pervades professional education, namely, the conflict between academic and professional interests. Many educators in pharmacy have been concerned that a 6-year program of pharmaceutical education would interfere with recruitment of students for graduate study. This concern figured heavily in the defeat of the proposed 6-year program by the A.A.C.P. in 1950, and it appears to be the thought that guided the curriculum committee in its deliberations of the last two years. It is indeed regrettable that a committee's work should be so prejudiced that its thinking and vision are unable to penetrate the veil that obscures the basic issues.

No educator in pharmacy worthy of his professional and educational badge seeks to impede progress in graduate education. To do so would be betrayal of his educational and professional obligations. Certainly, no one portion of educational responsibility can be sacrificed at the expense of another. The professional needs in pharmaceutical education should be met with the same degree of vigor and enthusiasm as are those of an academic nature.

If specialization in pharmacy can be achieved more effectively in an accepted pattern of professional education than in one that is both educationally and professionally deficient, pharmaceutical educators should be content with nothing short of their best efforts in developing specialized programs of education. A 6-year program of pharmaceutical education provides time for specialization in the fourth professional year. This feature was made abundantly clear in the report of the Pharmaceutical Survey, and it applies just as well to those who would specialize in graduate study as it does to those who choose hospital pharmacy.

Pharmacy has never been more seriously challenged than it is today. It has been caught in the web of governmental and public scrutiny from which extrication will be both long and painful. If pharmacy cannot recover its professional and spiritual virtues and divorce them from the dual complex of professionalism and commercialism that it has tried so hard to justify, it will not survive the tragedy of this hour. The profession must be supported by educational perspective that sees beyond the horizons of contemporary outlook.

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MEDICATIONS FOR NURSING STATIONS when the pharmacy is closed

by DONALD E. HILL AND ABRAHAM WOLFTHAL

►STANDARDS FOR HOSPITALS increasingly stress the responsibility of the pharmacy department for the control of drug distribution. The providing of drugs for nursing stations when the pharmacy is closed, has become an associated problem of some considerable importance. In recent months the literature has presented various ways by which pharmaceuticals are made available for nursing stations, after normal working hours.

Methods Now Used to Provide Drugs when Pharmacy is Closed

A brief description of the more common methods now employed in both small and large hospitals will lay the foundation for our discussion. One method is to allow the nursing supervisor on duty to enter the pharmacy and, to the best of her ability, obtain and dispense the pharmaceuticals needed. It is argued that a nurse who is capable of selecting and administering a medication from a nursing station should be capable of similarly selecting a drug from the pharmacy. The argument is not completely valid in that certain underlying facts are obscured. Medication sent to a nursing station has previously been packaged and labeled by a legally qualified pharmacist. Therefore, the nurse is familiar with a smaller number of drugs, packaged in a more or less uniform manner. It is highly improbable that she would find these familiar relationships in the stocks of the pharmacy. Moreover, legally and morally, we have no right to place upon the nurse the responsibility of drug labeling.

Others have proposed that a night duty physician (Medical O.D.) can be authorized to procure medication from the pharmacy. We are advised that this is legally acceptable, and therefore meets the requirements of dealing adequately with our problem. However, we need to take a look at all the factors involved in using the physician for these purposes. The concern of the night duty physician is primarily related to

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Figure 1 (below) shows the closed cabinet while Figure 2 (right) shows the three-compartment unit designed for condensed storage of pharmaceuticals

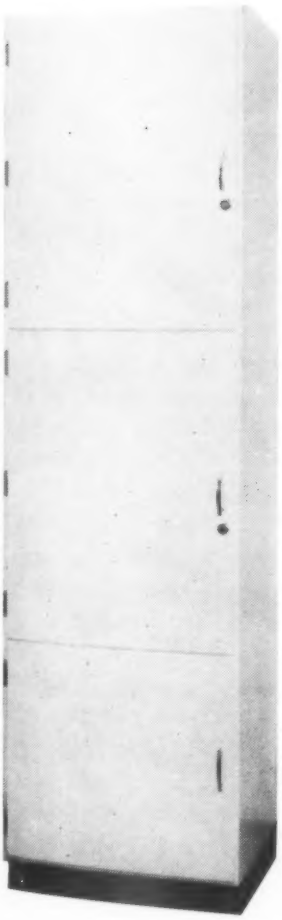

FIGURE 1

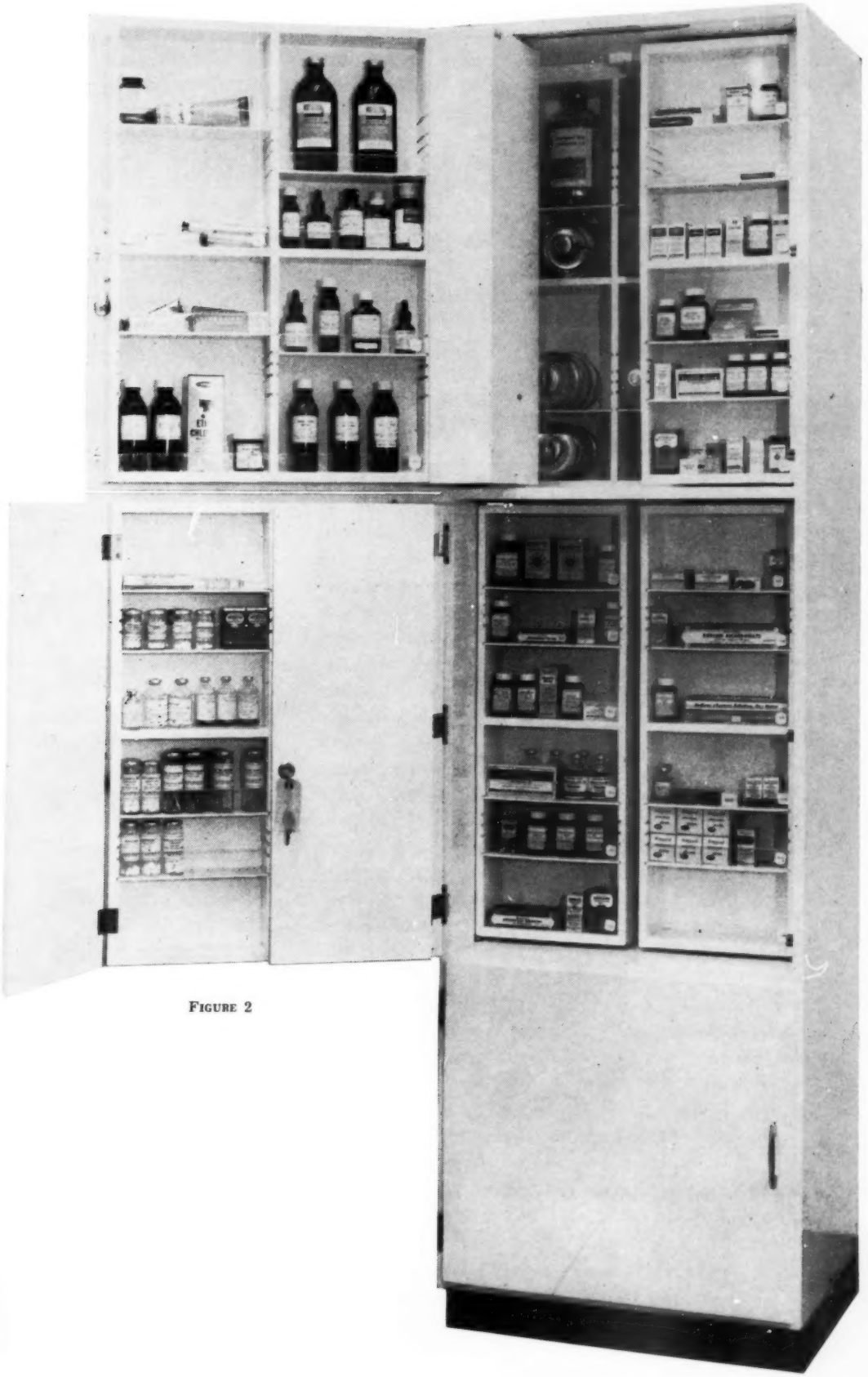

FIGURE 2

medical and surgical emergencies. In an emergency, time consuming minutes may be lost when a doctor, not familiar with the layout of the pharmacy, is unable to locate urgently needed drugs. Hence, we would consider it burdensome to add to his responsibilities the unfamiliar problems of drug procurement. Since the requirements for drug labeling have become more complex, it should not be expected that the physician could readily be able to meet all legal standards.

It is worthwhile noting that both of the methods discussed above do not have inherent feedback characteristics which will serve to inform the pharmacist that drugs have been taken from the pharmacy, or where they have been distributed. Such a possibility violates the premise of good hospital operating standards which provide that the procurement and dispensing of drugs shall be under the responsibility and control of a professionally qualified pharmacist. In spite of the good intent of others to leave some notation or record of drugs taken from the pharmacy, experience indicates that circumstances and human frailty often prevent accomplishment.

Instituting an "on call" program for the pharmacy staff is a relatively simple and acceptable means to provide for drug needs after hours. However, there is a necessary loss of time in obtaining the services of the pharmacist on call, and undeniably, this would be a burden in cases where there is only a single pharmacist on the staff. More recently, large hospitals have properly provided twenty-four hour service through the use of a night duty pharmacist. Obviously, this latter policy solves the problem of after hours pharmacy services completely. Nursing stations can carry a smaller and fresher stock of drugs, secure in the knowledge that they can obtain medication at all times. However, smaller hospitals with budget limitations would not be able to assume additional personnel cost to provide around the clock professional pharmacy staffing.

Finally, this brings us to the method that we feel provides a solution to our problem of after hours dispensing—a Nursing Supervisor's Reserve Drug Cabinet. A variety of cabinets are available which can be used for this purpose. Such a cabinet should combine the following attributes—compactness, security, adjustable shelving and storage facility that permits stock and drug labels to be easily and safely identified. The more expensive cabinets provide an integrated refrigerated section. However, refrigerated storage can be provided by means of a small independent refrigerator unit, at somewhat lesser cost. We selected the latter, together with a McKesson Stepsaver Cabinet. This is a three compartment unit especially designed for the condensed storage of pharmaceuticals. It packs into its two-foot width and seven-foot height, the capacity of many feet of straight shelving. There is flexible storage space in three depths—on the front door, on an inner hinged shelf and in the rear. Shelves are adjustable, and edge pieces are of clear lucite so that no part of the label is obscured. A narcotic locker, located on the inside of the middle compartment door, capably meets the requirements for secure storage of small amounts of narcotics and hypnotics (See Figure 1 and 2). Access to the cabinet is permitted to nursing supervisors and the pharmacy service only.

Purpose of Supervisor's Reserve Cabinet

The sole purpose of Nursing Supervisor's Reserve Drug Cabinet in our hospital is for the procurement of drugs, biologicals and other related items for inpatient nursing stations during periods when the pharmacy is closed. This cabinet is not used for outpatient purposes, which are provided for elsewhere in the hospital's program.

As the basis for the selection of drugs to be stocked, the pharmacy service reviewed past experience of drugs requested after hours. A survey of the hospital formulary was made to insure that representative drugs from all therapeutic categories would be included. Finally, the list of drugs was presented to the nursing service for evaluation. The list is periodically revised jointly by the pharmacy and nursing services. (See Appendix 1.)

The list is made available to all nursing stations and the drugs are arranged in the following categories:

1. Regular Nursing Station Medications (including tablets, capsules, external and internal liquids, injectables, refrigerated items and miscellaneous).
2. Restricted Drugs (narcotics and hypnotics).
3. Intravenous Solutions and Administration Sets.

The list states nomenclature, quantity, unit size, and gives the location for each drug in the cabinet. To further aid the nursing supervisor, a locator diagram is available.

All prepackaged items in the cabinet are of the size and quantity, and are labeled in the same manner prescribed for nursing stations. Injectables of small size ampuls are packaged into labeled containers. A small refrigerator unit for biologicals and other heat-labile drugs is located beside the Reserve Drug Cabinet.

Nursing stations request items by preparing an appropriate requisition in the same manner as if ordering medication from the pharmacy. This requisition is then submitted to the nursing supervisor on duty to procure the item(s) requested from the Reserve Drug Cabinet. The nursing supervisor makes a notation on the requisition indicating disposition of the request. The completed forms are placed in a designated area inside the cabinet. A pharmacist makes daily inspection of the Reserve Drug Cabinet, picks up the completed requisition and arranges for replacement of drugs which have been issued.

Supervisor's List Of I.V. Solutions And Administration Sets

Quantity in Cabinet	Nomenclature and Issue Unit Size
Intravenous Solutions	
2	Amigen 5% in Dextrose Soln. 5%: 1000 ml.
2	Dextran (Plasma Substitute) Soln. 6%: 500 ml.
6	Dextrose in Water 5%: 1000 ml.
6	Dextrose in Water 10%: 1000 ml.
6	Dextrose 5% in Isotonic Sod. Chloride Soln.: 1000 ml.
6	Dextrose 10% in Isotonic Sod. Chloride Soln.: 1000 ml.
2	Invert Sugar 10% in Distilled Water: 1000 ml.
2	Invert Sugar 10% in Normal Saline Soln.: 1000 ml.
2	Isotonic Sodium Chloride Soln.: 1000 ml.
2	Sodium Lactate 1/6 Molar Soln.: 100 ml.
Administration Sets	
6	Sterile Administration Set for I.V. Solutions
2	Sterile Blood & Plasma Admin. Set with filter
2	Sterile Blood & Plasma Admin. "Y" Set with filter

Supervisor's List Of Nursing Station Medication

Items marked with an asterisk (*) are controlled drugs and require M-139 Requisition Forms

Quantity in Cabinet	Nomenclature and Issue Unit Size
Tablets and Capsules	
2	Chloramphenicol 250 mg.: 50s
2	Chlorpheniramine 8 mg.: 100s
1	Digitalis 0.1 Gm.: 100s
1	Digitoxin 0.1 mg.: 100s
2	Diphenhydramine 50 mg.: 50s
2	Ephedrine 25 mg. & Amobarbital 50 mg.: 50s
2	Erythromycin 250 mg.: 30s
1	*Glutethimide 500 mg.: 50s
1	Meprobamate 400 mg.: 50s
1	Nitroglycerin 0.4 mg.: 100s
1	*Novobiocin 250 mg.: 30s
2	Penicillin G 200 M Units: 50s
1	Pentaerythritol 10 mg.: 50s
1	Phenobarbital - Belladonna: 100s
1	Perphenazine 2 mg.: 100s
2	*Prednisone 5 mg.: 30s
1	*Promazine 50 mg.: 50s
2	Sulfisoxazole 0.5 Gm.: 60s
1	*Streptokinase - Streptodornase Buccal: 12s
2	Tetracycline 250 mg.: 30s
1	Tolbutamide 0.5 Gm.: 50s
1	Warfarin 5 mg.: 50s
External Liquids	
1	Aluminum Acetate Solution (Burow's): Gallon
1	Ethyl Chloride 100 Gm.: Spray Bottle
2	Hydrogen Peroxide 3%: 480 ml.
1	Calamine Lotion: 240 ml.
1	Calamine Lotion with Phenol: 240 ml.
Internal Liquids	
1	Aromatic Ammonia Spirit: 60 ml.
1	Belladonna Tincture: 30 ml.
1	Chloramphenicol Suspension: 60 ml.
1	Erythromycin Suspension: 80 ml.
1	Kaolin - Pectin Mixture: 240 ml.
1	Penicillin Phenoxymethyl Suspension: 80 ml.
1	Potassium Iodide Solution: 30 ml.
1	Sulfisoxazole Suspension: 60 ml.
1	Tetracycline Suspension: 60 ml.
1	White Pine Comp. Syrup: 240 ml.
1	White Pine Comp. w/Ammon. Chlor.: 240 ml.
1	Isoproterenol Soln. 1:200 for Inhalation: 15 ml.
Injectables	
6	Aminophyllin 250 mg./10 ml.: Ampul
1	B Complex and C Vitamins: Vial
1	Caffeine and Sod. Benzoate 250 mg./ml. - 2 ml.
6	Calcium Gluconate 10%: 10 ml. Amps: 3s
3	Carbazochrome Salicylate (Adrenosem) 130 mg./ml. - 1 ml.: Ampul
4	Chloramphenicol Succinate 1 Gm.: Vial
5	Corticotropin (ACTH) 25 Units: Vial
1	Cortisone Acetate 50 mg./ml.: 10 ml.
1	Desacetyl-Lanatoside C 0.4 mg. - 2 ml.: Ampul (Cedilanid-D)
1	Desoxycorticosterone Acetate 5 mg./ml.: 10 ml. (DOCA)
6	Dextrose 5%: 50 ml.
1	Digoxin 250 mcg./ml. - 2 ml. Ampul: 3s
1	Digitoxin 200 mcg./ml. I.M. - 2 ml. Amp: 6s
1	Digitoxin 200 mcg./ml. I.V. - 2 ml. Amp: 6s
1	Dimenhydrinate 50 mg./ml.: 5 ml.
3	Diphenhydramine 10 mg./ml.: 10 ml.
3	Diphenylhydantoin Sod. 250 mg. - 5 ml.: Ampul
1	Ephedrine 50 mg./ml. - 1 ml. Ampul: 3s
1	Epinephrine in Oil 1:500 - 1 ml. Amp.: 3s
1	Epinephrine 1:1000 - 1 ml. Amp.: 3s
1	Erythrocin Lactobionate 1 Gm.: Vial
4	Hydrocortisone Succinate 100 mg.: Vial (Solu-Cortef)
1	Heparin Sodium 1000 U/ml.: 10 ml.
1	Heparin Sodium 10,000 U/ml.: 5 ml.
2	*Kanamycin Sulfate 333 mg./ml.: 3 ml.
1	Levarterenol Bitartrate 2 mg./ml. - 4 ml.: 4s
1	Lidocaine HCl 1%: 50 ml.
1	Lidocaine HCl 1% w/epineph: 50 ml.
1	Magnesium Sulfate 500 mg./ml. - 2 ml.: 3s
1	Menadione 5 mg. - Ampul: 3s
3	Menadione 72 mg.: Ampul
3	Metaraminol (Aramine) 10 mg./ml.: 10 ml.
1	Methamphetamine 20 mg./ml. - 1 ml. Amp.: 3s
1	Neostigmine Methylsulfate 500 mcg./ml.-1 ml.: 3s
1	Nikethamide (Coramine) 1.5 ml.: 3s
2	*Novobiocin 500 mg.: Vial
1	Oxytocin 10 USP Units/ml. - 1 ml.: 3s
1	Pantothenyl Alcohol 250 mg./ml.: 10 ml.
5	Penicillin G Crystal 500,000 Units: Vial
6	Penicillin G Crystal 5 million units: Vial
1	Penicillinase 800,000 units: Vial
1	Pentamethylenetetrazol 100 mg./ml. - 1 ml.: 3s
1	Perphenazine 5 mg./ml. - 1 ml. Ampul: 3s
1	Phenylephrine 1% - 1 ml. Ampul: 3s
3	Potassium Chloride 40 mEq./20 ml.: Ampul
1	Procainamide HCl 100 mg./ml.: 10 ml.
1	Procaine HCl 1%: 30 ml.
2	*Promazine 50 mg./ml.: 10 ml.
2	Promethazine HCl 25 mg./ml.: 10 ml.
1	Propantheline 30 mg.: Ampul
2	Quinidine Gluconate 80 mg./ml.: 10 ml.
1	Reserpine 2.5 mg./ml. - 10 ml.: Ampul
2	Sodium Bicarbonate 3.75 Gm. - 50 ml.: Ampul
1	Sodium Citrate 2.5% - 1 ml.: 3s
1	Sodium R-Lactate 11.2%/40 ml.: Ampul
2	Streptomycin Soln. 5 Gm.: Vial
2	Sulfisoxazole 4 Gm./10 ml. - 10 ml.: Ampul
4	Tetracycline 100 mg. I.M.: Vial
6	Tetracycline 500 mg. I.V.: Vial
1	Tolazoline (Priscoline) 25 mg./ml.: 10 ml.
1	*Urea for Infusion in 10% Invert Sugar (Urevert)
Ointments	
2	Bacitracin - polymyxin: 40 Gm.
1	Benzene Hexachloride (Kwell): 60 Gm.
2	*Hydrocortisone 1%: 20 Gm.
2	White Petrolatum: 60 Gm.
2	Zinc Oxide: 60 Gm.
Refrigerated Items	
1	Aminophylline Suppositories 0.5 Gm.: 12s

Quantity in Cabinet	Nomenclature and Issue Unit Size
1	Amyl Nitrite 0.2 ml. Ampul: 3s
1	Bicillin CR 300 (Benzathine & Procaine Penicillin G)
1	Corticotropin Respository 40 USP Units/5 ml.: 5 ml.
1	Cyclizine HCl Suppositories 100 mg.: 6s
1	Ergonovine Maleate 200 mcg./ml. - 1 ml. Amp: 3s (Ergotrate)
1	Epinephrine HCl 1:1000: 30 ml.
3	Hyaluronidase 150 USP Units: Vial
1	Insulin, Regular U 40: 10 ml.
1	Insulin, NPH U 80: 10 ml.
1	Insulin, PZ U 40: 10 ml.
2	Normal Human Serum Albumin: 100 ml.
1	Perphenazine Suppositories 2 mg.: 6s
1	Perphenazine Suppositories 8 mg.: 6s
2	Phytonadione Emulsion 50 mg./ml. - 1 ml.: Ampul (Mephyton)
3	Procaine Penicillin 300,000 units/ml.: 10 ml.
2	Thrombin 5000 units: Vial
Miscellaneous	
1	Hemorrhoidal Suppositories: 12s
2	Jelly, Lubricant: 150 Gm.
2	Jelly, Lidocaine 2%: 30 Gm.
1	Hydrocortisone-Neomycin-Polymyxin Otic: 8 ml. (Cortisporin)
1	Hydrocortisone-Polymyxin-Bacitracin-Neomycin: 4 Gm. Tube Ophthalmic (Cortisporin)
2	Phenylephrine HCl 0.25% intranasal: 15 ml.
1	Prednisolone 0.5% Ophthalmic Soln.: 5 ml. (Hydeltrasol)
1	Prednisolone with Neomycin Ophthalmic Soln.: 5 ml. (Neo-Hydeltrasol)
1	Zinc Sulfate Ophthalmic 0.05% Soln.: 8 ml.

Supervisor's List Of Restricted Drugs

Except as otherwise noted, Nursing Supervisors will reorder restricted drugs by preparation of Form PHS-2621 in its entirety

Quantity in Cabinet	Nomenclature and Issue Unit Size
Hypnotics	
2	Amobarbital for Injection, 0.5 Gm.: Ampul[1]
1	Chloral Hydrate Syrup 500 mg./5 ml.: 120 ml.[1]
1	Paraldehyde: 120 ml.[1]
2	Paraldehyde Injection, 10 ml.: Ampul[1]
2	Pentobarbital Caps 100 mg.: 20s
2	Pentobarbital Injection 50 mg./ml.: 20 ml.[1]
1	Pentobarbital Suppositories 60 mg.: 6s[1]
2	Phenobarbital Elixir 15 mg./4 ml.: 120 ml.[1]
2	Phenobarbital Tabs 15 mg.: 20s
2	Phenobarbital Tabs 30 mg.: 20s
1	Phenobarbital Sodium Hypo Tabs 60 mg.: 20s
2	Phenobarbital Sodium Injection 120 mg.: 1 ml. Ampul[1]
Narcotics	
3	A.P.C. Tabs with Codeine 30 mg.: 20s
1	A.P.C. Tabs with Codeine 15 mg.: 20s
1	Camphorated Opium Tincture: 100 ml.
2	Codeine Hypo Tabs 30 mg.: 20s
2	Codeine Hypo Tabs 60 mg.: 20s
2	Ethanol for Injection 95%: 50 ml.
3	Meperidine HCl Injection 50 mg./ml.: 30 ml.
1	Meperidine HCl Tabs 50 mg.: 20s
2	Methadon Injection 10 mg./ml.: 20 ml.
1	Methadon Tabs 5 mg.: 20s
2	Morphine Hypo Tabs 10 mg.: 20s
2	Morphine Hypo Tabs 15 mg.: 20s
2	Nalorphine Injection 5 mg./ml.: 2 ml.
1	Spiritus Frumenti (Whiskey): 960 ml.

[1]To replenish these items, Nursing Supervisors need submit only Part I of Form PHS 2621.

When a narcotic or hypnotic is requested, the nursing station prepares a transfer request. This form is used to transfer numbered narcotic or hypnotic units and corresponding administration records from the Reserve Drug Cabinet to the requesting ward. To replenish stocks of narcotics and hypnotics for the cabinet, the nursing supervisor submits, to the pharmacy, the transfer request together with a new requisition for narcotics and hypnotics for each unit transferred.

Unit containers are issued by the nursing supervisors in their entirety. Thus, the issue of a part of a container either without a label or otherwise labeled is not allowed. Nor are the labels of the containers allowed to be marked over or altered in any way.

In the event drug needs for the nursing stations cannot be met by the use of the Reserve Drug Cabinet, the nursing supervisor can contact the pharmacist on call for any emergency drug requirements. A nearby telephone in the same room allows the Supervisor to talk to the pharmacist for further assistance if needed.

Summary

A brief review has been given to present some of the principal methods used to dispense medications for nursing stations when the pharmacy is closed, after normal working hours. It has been shown that any method used to provide these services should give consideration to the following factors:

1. Safety in drug selection.
2. Safety in provisions for adequate and legal label requirements.
3. Secure, supervised and controlled storage conditions.
4. Inherent checks and balances providing for pharmaceutical supervision.

A Nursing Supervisor's Reserve Drug Cabinet has been proposed, together with a suitable selection of drugs. The general policies for the operation of this system have been given to demonstrate a method whereby pharmacy service can maintain controls over the distribution of drugs after normal working hours.

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WARNING – MAY BE HABIT FORMING
Medicine of this type should be taken only for the purpose and for the length of time for which your physician prescribed it.
STERILE WATER FOR INJECTION
FOR HOSPITAL USE ONLY
THE PHARMACY
HURON ROAD HOSPITAL
EAST CLEVELAND OHIO
DO NOT USE AFTER
STANDARD SOLUTION FOR USE IN BLADDER IRRIGATORS
FOR HOSPITAL USE ONLY
The Pharmacy
HURON ROAD HOSPITAL
Cleveland 12, Ohio
KEEP THIS AND ALL MEDICINES OUT OF THE REACH OF CHILDREN
For Sanitary Reasons this Item is Not Returnable for Credit or Exchange
LAUGHLIN'S BLADDER MIXTURE
(IMPROVED)
No. 3
(Narcotic - Keep record of use)
FOR HOSPITAL USE ONLY
CAUTION
NOT FOR I. V. USE
UNLESS ELECTROLYTES ADDED
MASSAGE LOTION
SHAKE WELL - Apply Sparingly
For External Use Only
FOR HOSPITAL USE ONLY
THE PHARMACY
HURON ROAD HOSPITAL
CLEVELAND 12, OHIO

THE USE OF SUPPLEMENTARY LABELS IN HOSPITAL PHARMACY

by SAMUEL E. ARLOW

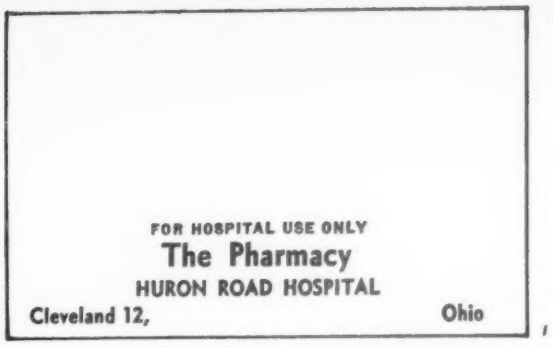
► PROPER LABELING OF DRUGS dispensed by hospital pharmacists is a matter which should be given a great deal of attention. Whether dispensed to inpatient or outpatient, the label must be "short, sweet and to the point."

Obviously, a stock label cannot be printed with all the desired information. This would necessitate a label inventory as large as the drug inventory. Stock labels, printed to cover most situations can, when necessary, be supplemented with smaller labels.

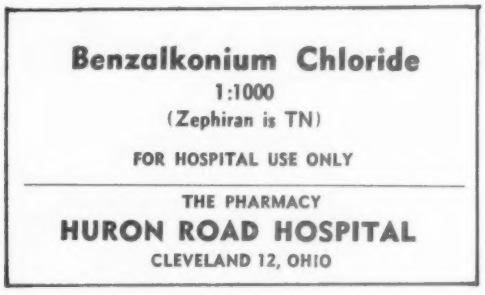
All pharmacists are familiar with the *Shake Well Before Using, For External Use Only,* and *Keep in Refrigerator* type of label. We have tried to go beyond this and give more explicit information.

Inpatient drugs are identified only by the patient's name, and by the name and strength of the drug. In the case of floor stock drugs, only the name and strength of the drug appear on the label. It is almost impossible to give directions for use on inpatient medications because, in our experience, dosage schedules appear to be revised hourly. For this reason all labels for inpatient use are now being printed with the legend, *For Hospital Use Only.* The following are examples of basic labels which can be supplemented later with additional information.

SAMUEL E. ARLOW is Chief Pharmacist at Huron Road Hospital, Cleveland, Ohio.



1



2

The *For Hospital Use Only* legend restricts the use of such medications to the nursing units. It informs the nurse that such medications are not labeled with the necessary information to be taken home by the patient. These medications may be relabeled as a prescription if the physician desires the patient to take medications home.

To fill prescriptions for our patients to take home upon discharge is part of our obligation. However, since the pharmacy is not equipped in space or personnel to carry on a retail business, we do not refill prescriptions. The "General Policy Statements" as approved by the Executive Committee of the Medical Staff and the administration of the hospital say:

> *Refills on prescriptions for persons who are not patients of the hospital will be referred to their neighborhood pharmacy.*

This policy is understood by the physicians and the pharmacists but the patients it involves are not necessarily aware of it. Misunderstandings and hard feelings could and did occur when a bottle was presented to the pharmacy for refilling. This problem was overcome by the printing of two small labels. The first reads:

> This prescription is not refillable at Huron Road Hospital. Additional supplies can be obtained from your local Drug Store.

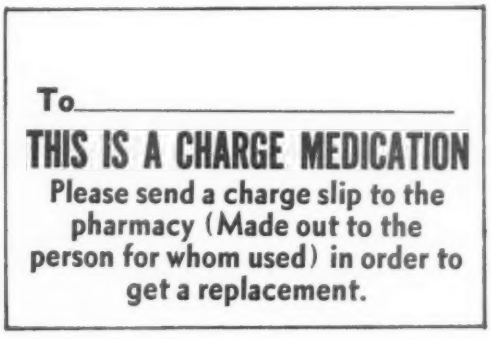
This is a good label and serves its purpose well. But, as with most first attempts, one important factor was overlooked. The label implies that the prescription is refillable. To overcome this, the following label was printed:

> This prescription is not refillable at Huron Road Hospital.

The first label is used exclusively for prescriptions which may be refilled, while the second is used for the others.

This, we feel, is an example of adequate labeling. A little more information is given than is actually necessary, but misunderstanding of hospital policies is prevented.

To enable nurses to differentiate between charge floor stock and free floor stock, the following label was printed:


To_____
THIS IS A CHARGE MEDICATION
Please send a charge slip to the pharmacy (Made out to the person for whom used) in order to get a replacement.

3

This label is placed on all containers of charge floor stock on the nursing units. Although seemingly insignificant, its value cannot be overestimated. It saves time, tempers and torment.

Identifying the Drug in the Container

The problem which has given us the most trouble, and it appears to be a common one throughout the hospital field, is that of identifying the drug in the container. Again, to quote our "General Policy Statements":

> *Drugs of identical composition will be supplied by the pharmacy according to the nonproprietary name regardless of proprietary names prescribed. . . .*

For those drugs always prescribed by their generic names such as aspirin, morphine and phenobarbital, there is no problem. Neither is there a problem with single brand items like Darvon®, Terramycin®, and Varidase®. The problem is with those drugs that have more than one manufacturer: hydrochlorothiazide, meprobamate, tetracycline, *et al.* The label should either bear only the generic name, or the generic name along with all appropriate tradenames. With the first type of label, the nurse would be required to remember which tradenames each generic name encompasses, look for her information in a reference book, or call the pharmacy. With the second type, the label would be larger than the container in many cases. An explanation is needed to inform the nurse that although the drug is being dispensed under its generic name it is chemically equal to the brand ordered. The brand ordered must be identified also for the nurse's information, e.g., let us assume that the pharmacy routinely stocks Equanil® which is dispensed for all meprobam-

ate orders. Let us further assume the receipt of an order for Miltown®. It must be labeled as meprobamate, be identified to the nurse as Miltown®, but still not misrepresent the manufacturer's name. In other words we had to state then " 'Brand X' which was ordered is one of the many names for 'Y'; however, 'Brand Z' may be in the container. 'Y' has been dispensed, but for your information, it is identical with 'Brand X'." Confusing, perhaps, but dispensing generic equivalents in the hospital is, or at least should be, an internal matter controlled by the Medical Staff.

Misbranding is specific in the laws of the state[1] and carries a specific penalty.[2] The legality of generic dispensing as yet, has not been solved by the courts, but there is no question at all about misbranding. If the pharmacist misrepresents the drugs dispensed he is wrong—morally and legally. The concept of generic dispensing is not under discussion in this paper, but we must guard against misbranding.

The correct labeling of drugs is not helped by the use of the *American Hospital Formulary Service*.[3] There are several entries which include a few tradenames as representative of the brands generally available on the market. This may imply to the reader that only those drugs listed would be considered by the pharmacist as the brand to carry on inventory. The *American Hospital Formulary Service* lists four brands of reserpine. The pamphlet *Proprietary Names of Official Drugs*, compiled by the American Pharmaceutical Association, lists thirty-three brands of reserpine, and there are more.[4] It is for reasons such as this that the pharmacist must at all times be on his guard to label drugs clearly, distinctly and correctly.

The following label was developed to suit our needs:

NOTE: This medication is dispensed under it's generic name. Brand Names are supplied for reference only and do not imply the brand supplied.

4

This label is attached to all containers labeled with generic and tradenames. The following are two examples of the use of this label: one for floor stock medications, the other for a charge medication.

Benzalkonium Chloride
1:1000
(Zephiran is TN)
FOR HOSPITAL USE ONLY
THE PHARMACY
HURON ROAD HOSPITAL
CLEVELAND 12, OHIO

NOTE: This medication is dispensed under it's generic name. Brand Names are supplied for reference only and do not imply the brand supplied.

5

Rm. 815 Jones, John #12345

Meprobamate
400 mg
(Miltown is a TN)

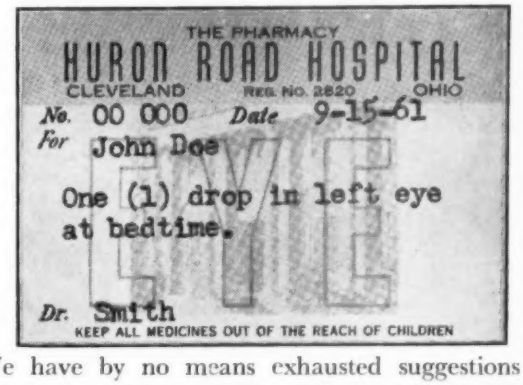
FOR HOSPITAL USE ONLY
The Pharmacy
HURON ROAD HOSPITAL
Cleveland 12, Ohio

NOTE: This medication is dispensed under it's generic name. Brand Names are supplied for reference only and do not imply the brand supplied.

6

We feel that this label is largely acceptable as far as misbranding is concerned, and ethically acceptable in guarding against misrepresentation. This is an example of a basic *For Hospital Use Only* label which can be modified and expanded with a supplementary label to meet a specific need.

Another problem which is not restricted to the hospital field, but concerns pharmacists everywhere is how to keep ear drops out of the eyes, nose drops out of the ear, etc. The use of common strip labels *For the Nose, For the Ear* and *For the Eye* are ideal for this purpose but, there is no room on the smaller bottles. If it is typed on the label, it is apt to be overlooked at a casual glance. We had three rubber stamps made: *EAR, EYE,* and *NOSE.* They are made in letter outline only, and they are stamped over the label. The nature of the stamp allows the directions for use to show through.



We have by no means exhausted suggestions for supplementary labels which might be utilized. We try to keep our labeling up-to-date, printing labels as the need arises. We feel that the label on the container must be informative to the nurse, to the physician and the patient. By taking a little extra time when applying the label, we can eliminate guesswork on the part of the nurses. The route of administration, the expiration date, all dangers and warnings should be in plain sight on the container. It is the responsibility of the pharmacist to supply this information, and to do it in a clear, concise and forthright manner.

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the hospital pharmacist and 'SPAN' OF MANAGEMENT

by SIDNEY A. ROSENBLUTH *and* HENRY M. BURLAGE

►WHAT DOES "SPAN" MEAN?

What does the concept "Span of Control" or "Span of Management" mean to the hospital pharmacist? In what ways is it applicable? Has it become more significant in recent years? What will the future bring to hospital pharmacy management?

Hospital pharmacy is a highly specialized area within the realm of pharmacy. It is ever changing, however, and assuming new roles. Because of this state of flux, past experience may not always serve as the best guide for the chief pharmacist or area supervisor.

The chief pharmacist is, in addition to his professional role, a *manager*. He should have knowledge of management concepts both old and new. He is, of course, not bound by these ideas, but definitely needs an awareness of them. These various concepts should be as well understood within the hospital pharmacy as in commerce, in industry, in the military, or in religious organizations.

Organization for Supervision

One of the vital factors contributing to successful operation of a hospital pharmacy is proper organization. As will be seen, the *"Span" or number of personnel one supervisor may adequately coordinate is definitely limited under given circumstances.* This point is of extreme importance during the organizing function.

Why More Personnel? The number of functions related to the progressive department of pharmacy in the current hospital system is increasing steadily. In addition to the traditional dispensing, some of the other functions include: sterile product manufacturing, bulk manufacturing, purchasing, prepackaging, research, and operation of central sterile supply, oxygen therapy, isotope pharmaceutics, and formula room. Teaching of undergraduate pharmacy, nursing, and medical students or hospital pharmacy residents is not uncommon. Trends appear to indicate a larger consultation role with the physician on the nursing unit along with 24 hour, 7-day service.

These functions require personnel—who in turn must be adequately supervised to gain efficient, economic operation. In setting up the relationships by which proper supervision may take place, the hospital pharmacist should be strongly aware of the following:

1. There is a *limit* to the number of subordinates one supervisor may effectively supervise.
2. This "limit" may be extended by changing the immediate circumstances.
3. There must be balance between the supervisor's "Span" and the number of administrative levels within the organization for optimum efficiency and economy.

The above three points may well serve as a springboard to the study of the "Span" concept.

Management Functions

What is "Span of Management"? How does this factor relate to the process of management in general? Is the concept valid? Is it changing? How do the authorities and theorists of the past and present describe and explain the meaning of "Span"? What is its trend?

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It is generally recognized that in order to attain the desired objectives or goals of an individual or group, there are characteristic functions which must be fulfilled. The literature assures us that these are "organic" or "vital" functions of management, which when not properly accomplished result in ineffective or inefficient realization of those objectives.

There is disagreement on the exact names of these functions. However, a considerable amount of correlation is noted in descriptions of the activities involved. A rather broad breakdown fairly well agreed upon cites the vital functions as *planning, organizing,* and *controlling.* The subject of Span of Management is of importance, as will be shown, during the accomplishment of the organizing function.

Organizing and "Span"

"The function of *organizing* may include any process that results in the antecedent provision of the necessary basic conditions for successful business accomplishment." The *organizing* process has to do with "bringing functions, physical factors, and personnel into proper relationships with one another in advance of the execution of a plan or a major phase of it."[1]

To simplify the process of *organizing*, several questions might be asked by the organizer of himself: What type of structure does the organization need? What kind or kinds of work must be performed? How should we arrange or group that work for most efficient performance? Allen suggests in answer to these questions that the organizer:

1. "Identify primary work of the organization in terms of its objectives;
2. Arrange this work in properly grouped and balanced packages; and
3. Arrange for a proper span of supervision for each managerial position."[2]

It is generally agreed that the concept of Span, although of consideration at other points, actively enters the picture during the "group" phase of the organizing process.

Nomenclature

The original term "Span of Control" was brought into use by L. F. Urwick during the 1930's. During the last 20 years other terms have made their appearances. Many current authors feel the original term too restrictive, considering control as only one of the organic functions of management. Spans of Management, Supervision, and Authority are becoming more prevalent in the literature as representatives of the concept. Brech prefers "Span of Responsibility" citing that the term "refers only to the number of executives and supervisory subordinates who are *responsible* to a given manager." He suggests further that the core of the problem of Span "lies in the number of persons themselves carrying managerial and supervisory responsibilities for whom the senior manager retains his over-embracing responsibility of organic functions."[3] Along these lines, Meij visualizes another dimension, adding "depth of control" to span. He feels it "relates to the penetration of the leaders will through the different levels of management to the ultimate operator."[4]

Traditional "Span" Concepts

The concept of *Span of Management* depends upon the inability of any one person to adequately manage "an infinite number of subordinates."[5] The Span of Management is the actual number of subordinates which a particular person is able to manage under given circumstances. These "circumstances" will be discussed later at length.

While the bulk of literature discussing Span is confined to the last 30 years, the problem itself has been apparent for centuries. The Bible presents an oft quoted account of Moses' difficulty in organizing the Exodus of the Israelites. Moses was not able to cope with the many problems involved with the vast numbers of his followers. His father-in-law (who appears to be one of the earliest recorded management consultants) recognized the basic difficulty as one of Span, and advised Moses accordingly. Moses forthwith "chose able men out of all Israel, and made them heads over the people, rulers of thousands, rulers of hundreds, rulers of fifties and rulers of tens. And they judged the people at all seasons; the hard causes they brought unto Moses, but every small matter they judged themselves."[6]

During the early 1900's the Span problem first became noticeable in literature reflecting international practices of management in private and military organizations. In 1933, V. A. Graicunas produced an article "Relationships in Organization" first published in the *Bulletin of the International Management Institute*, which has become a classic. In this article Graicunas developed a mathematical justification of the restricted Span. He suggests that the manager must keep in mind all possible relationships involving his subordinates and himself. These include (a) his direct contacts with each subordinate, (b) his contacts with groups of two or more, and (c) cross-contacts among two or more subordinates (not including the manager). It may be seen that increasing the number of subordinates will proportionally increase the supervisor's direct relationships. However, the group and cross-relationships increase at a far greater rate.

Mathematics of Supervision

To illustrate, the following from an article by L. F. Urwick: "If A supervises two persons, B, and C, he can deal with them individually or as a pair. The be-

havior of B in the presence of C and of C in the presence of B will differ from their behavior when each is with A alone. Furthermore, what B thinks of C and what C thinks of B constitute two cross relationships which A must keep in mind when delegating work on which B and C must collaborate in A's absence. Even in this extremely simple unit or organization, with two subordinates, a superior must keep up to six relationships constantly in mind.

"Then when a third subordinate, D, is added, A's direct relationship with individuals increases by 1 (A-D), but the various groupings he may have to deal with increase by 7 (A-B-D, A-D-B, A-C-D, A-D-C, A-B-CD, A-C-BD, and A-D-BC), and the various cross relationships he may have to reckon with increase by 4 (B-D, D-B, C-D, D-C) making a total of 18.

"A fourth subordinate brings the total up to 44. The situation really gets complex when a fifth subordinate is added—even granting that many of the relationships will never need explicit attention. The superior again increases his direct relationships with individuals by 1—representing a 25 percent gain in his *power to* delegate. But the number of group and cross relationships he may have to deal with has gone up from 44 to 100—more than 100 percent increase in the burden of *supervision and coordination.*

"If a sixth man is added, the group and cross relationships jump to about 200. A seventh subordinate puts the figure at between 450 and 500. And so on."[7]

The above situation as presented by Graicunas may be expressed mathematically as follows:

$$C = \frac{N\,(2N + N - 1)}{2}$$

where C represents the total relationships or contacts possible and N represents the number of subordinates reporting to a given supervisor.

It should be noted that the Graicunas concept concerns a measure of the total *possible* relationships, and does not provide an answer to the actual relationships which *do* occur, their nature, or their severity. Nor does it consider the characteristics of the supervisor or the subordinates. By disregarding these facts, many managers and authors have concluded that the optimum number of subordinates for a supervisor must be around 5 or 6 as the *possible* number of relationships tend to increase quite rapidly at and beyond this point. Others have realized that other "circumstances" strongly affect Span.

Urwick set forth a principle based on the Graicunas idea: "No superior can supervise directly the work of more than five or, at the most, six subordinates *whose work interlocks.*"[8] General Hamilton states similarly, "The smaller the responsibility of the group member, the larger may be the group. . ."[9] Davis recognized two levels of supervision: the "unit of operative supervision" and the "unit of executive supervision." The former includes the first level of supervision and involves primarily face to face leadership. There may be some cross contacts but usually very few supervisor-group contacts. So a wide span of 15 to 20 subordinates is suggested here. The executive level of supervision applies to all supervisors above the initial operative supervision. Here the decisions are more complex, take more time, and involve mental grappling with intangibles and abstractions. Davis suggests an optimum Span will usually be more than five.[10] The above represent the traditional concept of Span.

Span vs. Levels

A restricted Span will inherently lead to more levels and more extensive departmentation. Factors illustrating the undesirability of levels include: (a) communications complicated through difficulty in accuracy and contact and increased time of transmission; (b) flexibility of organization decreased; (c) planning and controlling complicated; (d) cost increased due to extra salaries, facilities, and effort; (e) morale reduced due to less direct contact with the senior executive, oversupervision (reduced delegation), and executives reporting lower in the organization than desired.

It follows that a compromise or balance between Span and levels must be effected for any given set of circumstances in a particular organization.

Recent Concepts

The recent literature has shown changes in the traditional concept of Span. Haire criticizes those who cling solely to the mechanistic numerical theory as being "just plain silly";[11] while Suojanen considers the limited span idea in modern management as little more than "fable."[12]

The great majority of authorities do agree that Span may be increased through various changes. Better understanding of management and people has resulted from intensive studies of existing situations in organization and through the development of sociological and psychological techniques.

Suojanen is the chief exponent completely denying the validity of Span. He has several arguments which include: (a) Numbers of subordinates currently reporting to one executive are far more than would be expected from the traditional concept; (b) The concept was borrowed from the military organization and applied by theorists to non-military organizations. It was not realized that the uncertainty of military activities forces a more restricted span than a civilian organization might require; and (c) the Span principle was advanced before social scientists had produced evidence of the importance of primary relationships in the organization. Suojanen believes through group

coordination an unlimited number of executives may be theoretically supervised, thus invalidating the entire span concept.[13] He identifies the permissive authority and substantive decentralization ideas as closely related to the group coordinating concept. Substantive decentralization includes centralization of policy and decentralization of operations.[14]

Meij and Haire may be considered intermediates in the battle between the traditional Span-of-controllers and the "upstart" Suojanen. Meij agrees with most of Suojanen's criticisms but does firmly assert a belief in span of control as a "fundamental principle of organization."[15] As noted previously Meij has suggested a new dimension of control, that of depth.

Determining Factors

There are certain factors which directly affect Span and by correctly applying these factors, the span of a particular degree. A listing of factors suggested by numerous authors is as follows:

(a) Training possessed by subordinates; (b) number of interrelationships requiring supervisory attention; (c) business dynamics and the complexity of policy formulation; (d) degree to which objective standards are applied; (e) time; (f) effectiveness of communications; (g) limitations of attention; (h) the ability of the superior; (i) the importance of very definitely fixed responsibility; (j) the extent of the existence and influence of informal groups within the organization; (k) other (external to the organization) duties of the executives; (l) variety and importance of activities supervised; (m) the philosophy and practice of the organization with respect to delegation; (n) relative importance of supervisory payroll; (o) practicality of relieving an extended span of supervision; (p) the "maturity" of the superior-subordinates relationships; and (q) the presence and competence of staff assistants.

Determining the Span in any "particular situation stems from appropriate study of the specific circumstances involved." This "reduces the merit of any given figure recommended in principle."[16]

Summary

While there appears to be considerable conflict among theorists concerning the terminology, key factors, and general future of span; the trend definitely appears to be toward a broader span, with increased understanding of the actions of individuals and groups.

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Father Rayner Williams shows the Sienna College campus to Institute enrollees

1961 INSTITUTES

Sienna College, Albany . . . University of California

by PAUL F. PARKER

Joseph Oddis (right) and Louis Jeffrey (second from right) welcome institute registrants Richard Briggs from Maine (left) and Harold Black from Iowa

Clinic Session leaders at the Albany Institute worked hard with their groups and then met to compare notes

R. David Anderson, assistant director of Pharmacy Service at Ohio State Health Center, Columbus, speaks at the Albany Institute

Albany Institute

► FATHER RAYNER WILLIAMS is shown above describing the campus of Sienna College to registrants at the Albany Institute. This photograph typifies the hospitality of the 65 Catholic priests who operate Sienna College and made it so easy for all of us attending the institute to feel at home in an obviously sectarian environment. Father Williams also typifies the men who have dedicated their lives to religious work in the Order of Friars Minor (Franciscans). Although only 34 years of age, he has served as an enlisted man in the Navy, worked in the Treasury Department in Washington, and completed ten years of academic and religious study. Father Williams teaches economics and accounting and is assistant dean of men.

Sienna College is one of twenty-six colleges and universities in the United States operated by the followers of St. Francis of Assisi. Organized in 1937, it presently has an enrollment of about 2,000 students. Like many small colleges, it has a dynamic building program and

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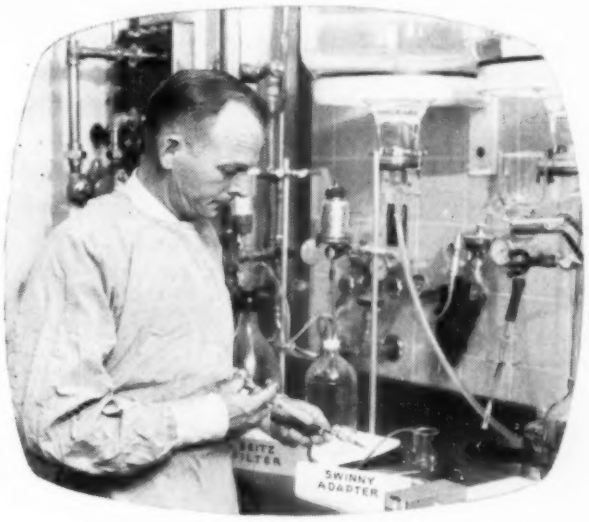
its new Plassman Hall, a residence for two hundred and fifty students, was an ideal place for the institute registrants to be housed. The meetings were held in the reading room of the new Dawson Memorial Library. The treasurer of the College, Fr. Kennedy, was always available to make the facilities at Sienna the ideal place to hold a hospital pharmacy institute.

The Albany Institute had a number of highlight features—the well-organized Northeastern New York Society of Hospital Pharmacists, the unusually high registration, the party at the Saratoga race track, the hard-working clinic session leaders, the presentation by Dr. Charles Walton, the volume of material distributed by Mr. Herbert Flack, the faculty discussions, and perhaps above all, the enthusiasm of the registrants.

The hospitality of the members of the Northeastern Society of Hospital Pharmacists was obvious to the registrants and faculty from the time they arrived in the Albany area on Sunday until they departed Friday afternoon. Mr. Fay Peck had an important role in arranging for everyone's comfort, but it was evident that all of the members of the group cooperated. They arranged for transportation to the college at all hours of the day and night; organized groups to go out to dinner Sunday evening; arranged a reception that extended throughout Sunday afternoon and evening (even including some delectable petit fours that were imported from New York City).

The registration of 133 at Albany was probably higher than at any institute since 1946. Registration is usually limited to 125 people. We understand that it was impossible to accept an additional 35 to 40



ABOVE: *Dr. Charles Jackson from the Pharmacy staff at the University of California Hospitals, San Francisco, gives a television demonstration on the preparation of parenteral solutions.*
BELOW: *The procedure being carried out is photographed and televised to the institute enrollees*

Group attending the Albany Institute

applicants. This should emphasize the need for our members to apply for admission as soon as application blanks are available. Among the registrants, there were 34 from New York, 21 from the surrounding area, and 78 from outside the New England area.

Since the program for both institutes was published in an earlier issue of THE JOURNAL, only portions of it will be discussed here. The general topic of administration was covered on Monday with subjects ranging from "Determining the Scope of Pharmacy Service" to a discussion of the "Guiding Principles to Hospital Charging." The latter was climaxed by a discussion in the clinic session groups of the question "Should the cost to administer injectable drugs be included in the price of drugs charged to the patient?" Incidentally, the discussion of this same question at the San Francisco Institute was almost a mute subject. It developed that the California Hospital Association has adopted a set of "Guiding Principles for Hospital Charging" which covers this and many other similar questions very specifically. Suffice it to say here that in these principles, it is recommended that the cost to administer injectable drugs not be included in the price of the drugs charged to patients.

The social event of the week was held on Monday evening at the Saratoga race track which is located some 30 miles from Albany. (The Sisters were entertained at St. Peter's Hospital.) This was one of the most enjoyable affairs I have attended in several years of going to institutes and conventions. Mr. Tom Flynn, president of the local group, had arranged for a beautiful buffet dinner at the track and even had one of the races named for the hospital pharmacists. Although such an occasion might be considered questionable for a professional meeting, the local group should be complimented for making the arrangements in such very good taste.

A highlight of the program was the presentation by Dr. Charles Walton on "The Pharmacology of Diuretics." This is the first time Dr. Walton has served on the faculty of the A.H.A. Institutes, although he has participated in several institutes conducted by the Catholic Hospital Association. His presentation provided a basis for comparing the pharmacologic action of modern diuretic agents by first developing the subject of the anatomy of the kidney, the function of the nephron and the physiology of the renal system. Dr. Walton's presentation lasted three hours and most registrants found it so interesting that they would have preferred to have him discuss the subject in still further depth.

On Thursday afternoon, the program was concluded at 3:30 p.m. and the group was taken on a tour of the Albany Medical Center. Mr. Louis Jeffrey and his staff had arranged every detail on a minute by minute schedule. His department and staff were most impressive. They probably represent the ultimate in organization, neatness and efficiency. This tour represented a fine example of good hospital pharmacy practice for the registrants and everyone had the opportunity to visit with his staff over dinner in the Medical Center dining room.

San Francisco Institute

The institute in San Francisco was no less enjoyable and valuable than the one in Albany. The program was held in the Millberry Union on the University of California Medical Center campus which is located in San Francisco proper. Again, the facilities were ideal. The Millberry Union is located directly across the street from the Medical Center and is used for housing graduate students. It overlooks the entire city with a striking view. The registrants lived, ate, and met in the same building, which was more like a first-class hotel than a student union building. The efficiency of the staff of the Union certainly earned the gratitude of all those who attended the institute.

It was good to have a meeting in the home town of ASHP President Jack Heard. He and the members of the Northern California Society were always on hand to make the visitors welcome. The efforts of a few members cannot be omitted—Dean Troy Daniels, for being such a gracious host; Dr. Don Brodie, for his help in arranging the program; Dr. Charles Jackson, president of the local group, for arranging the television "spectacular"; Mr. George Gruber for transportation arrangements, and Mr. Charles Towne, for arranging the special sessions for the Veterans Administration pharmacists who attended.

Registration at San Francisco was also high. There were 116 registrants including 41 from the local area, 34 from the region and 36 from more distant places. Several registrants came from Canada, and one each from Alaska, Hawaii and Japan.

Apparently, the hospital pharmacists in California could not be outdone by those in New York. They, too, had a reception for the registrants where they served their native product—California champagne. Then, on Monday evening, the group was transported by buses to the Napa Valley to tour a winery. This was followed by an outdoor steak dinner in a park-like area on the grounds of the winery. Although the tour was very interesting and the steak delicious, the most interesting part of the evening to me was the opportunity for fellowship on the hour and a half bus trip.

The program of the San Francisco Institute had several highlights. The presentation on "Job Specifications and Job Descriptions" by Mr. H. H. Hixson, administrator of the University of California Hospitals, was particularly good. The sample materials he distributed included actual job descriptions of various

pharmacy positions at his hospital. Mr. Jerry Yalon, a former pharmacist, who is now associate administrator of the University of California Hospitals, participated in a panel on the pharmacy budget. Since Jerry understands the problems of both hospital pharmacy and hospital administration, he is a popular faculty member.

On Thursday morning, the University of California Medical Center staff presented a closed circuit television show. Coordinated by Dr. Charles Jackson and produced by the Visual Aids Department of the University, this show was the outstanding feature of the program. The subjects presented were manufacturing (both sterile and non-sterile) and a control program. The show originated in three separate areas of the Medical Center—in the bulk manufacturing area, the sterile solution room and in the animal quarters where pyrogen tests are run. It was televised to the meeting room in the Union Building with a series of monitors.

Perspective on Institutes

For sixteen consecutive years, the American Hospital Association has conducted Hospital Pharmacy Institutes in cooperation with the American Society of Hospital Pharmacists and the American Pharmaceutical Association. Every program, in some way, differs, yet in a general way, they are very similar. The institutes probably benefit newcomers in hospital pharmacy more than those who attend year after year. This is necessarily true because in every instance well over one-half of the registrants have never previously attended an institute.

Several people in hospital pharmacy practice today attended the first institute which was held in Ann Arbor in 1946. Perhaps a few of these people remember the first institute with some nostalgia. At that time, each registrant and faculty member was eager to share common experiences. It was the first time that hospital pharmacists had ever had an opportunity to share their day to day problems of practice on an organized group basis. As a result, each person who attended an institute came home with a new idea—perhaps he had decided to start a manufacturing program, or an internship; perhaps he was determined to organize a pharmacy and therapeutics committee of the medical staff; he may have found a new concept in labeling, or heard for the first time a lecture on personnel relationships.

Registrants who attended the 1961 institute had quite a different experience. Some of them were well established hospital pharmacy practitioners who already knew about manufacturing programs and pharmacy and therapeutics committees. Their purpose in attending was to learn about new advances in techniques. A larger number of those who attended had never previously participated in an institute. Perhaps they had only recently graduated from a college of pharmacy. Their purpose in attending was to learn about the fundamentals of hospital pharmacy practices. In a sense, as the two types of registrants came together for a weeklong period of study and discussion, one group served as leaders for the others.

Year after year, the institutes fill an important need in continuing education for hospital pharmacists. The American Hospital Association and its staff deserve the gratitude of hospital pharmacists everywhere for their dedicated work. The new hospital pharmacy staff representative, Mr. Regis Kenna, now serves as the institute coordinator for the American Hospital Association. Mr. Kenna and the ASHP-A.Ph.A. coordinator, Mr. Joseph Oddis, will be on hand in Denver and Pittsburgh for the 1962 institutes.

"Defend the Profession"

► "WANTED—Pharmacists who will Defend the Profession" is the battle cry of the fund raising campaign which has been launched by the American Pharmaceutical Association to defend the principles involved in the Justice Department's attacks on pharmacy. Every member of the Association is receiving detailed information regarding the campaign as well as developments in the pending antitrust cases in Arizona, California, Idaho and Utah.

At the Annual Convention in Chicago, the following resolution was passed and all pharmacists are being asked to contribute to "Defend the Profession."

WHEREAS, certain antitrust cases are now pending which are vital to the entire profession, therefore

BE IT RESOLVED, that the House of Delegates endorse the action of the Council that the American Pharmaceutical Association undertake at once a national fund-raising drive among individual pharmacists to defend the professional principles involved in these test cases.

Contributions may be sent to:

Defend the Profession
P. O. Box 1921
Washington 13, D. C.

Therapeutic Trends

edited by WILLIAM JOHNSON, *Bronson Methodist Hospital, Kalamazoo, Michigan*

Clinical Pharmacological Investigation Of Polythiazide—A Potent Oral Diuretic Agent

Polythiazide is a new potent diuretic agent of the benzothiadiazine group. Ralph Ford reports in *Current Therapeutic Research 3*:320 (July) 1961 on the pharmacology. Tests showed the best dosage to be between four and eight mg. In a potency determination, it was shown that polythiazide was 2.1 times as potent as meralluride. Predominant excretory effects were on sodium with lesser effect on potassium. The tests showed that with polythiazide, when used in chronic therapy of patients with edema of varied etiology, no significant changes are noted in serum biochemical architecture. It is also effective in the management of the hypertensive state and has a duration of action of at least 36 hours. The material for this study was supplied by Chas. Pfizer and Company as P-2525.

RICHARD H. HARRISON

Influence Of Temperature On Cardiac Output

Patients with cardiovascular disease do better clinically and recover faster if they are placed in a comfortable air-conditioned ward rather than in an oxygen tent in a ward open to the unmodified environment. This is reported by Burch *et al.* in *J. Am. Med. Assoc., 176*: 1017 (June 24) 1961. Patients in congestive failure are unable to perform the extra work necessary to maintain thermal equilibrium and therefore accumulate heat with a further deterioration in cardiac function. The authors state that except in certain instances maximal benefit to the patient was obtained simply by placing him in a cool environment with a normal oxygen concentration of the air. An increase in oxygen concentration of the atmosphere produced no noticeable alteration in the clinical state of most of the patients.

KENNETH W. HUCKENDUBLER

Serum Sickness

Serum sickness following administration of bovine tetanus antitoxin in a horse serum-sensitive individual was reported by Reisman *et al.* in *J. Am. Med. Assoc. 176*:1004 (June 24) 1961. The authors stated that while antitoxin of bovine origin has definite value in passive protection against tetanus, pre-existing hypersensitivity to bovine serum itself or the antigenic relationship between bovine and horse sera may still lead to the development of serum disease. The same precautionary measures (skin testing) must be taken with bovine serum before administering as with equine serum.

KENNETH W. HUCKENDUBLER

Motion Sickness Preventive

α-Ethyl-α-phenyl-glutarimide, in a dose of 125 mg. taken one and one-half hours before exposure to rough water, gave effective protection against seasickness for a least three or four hours with very low incidence of side effects. Sixty and eighty percent of the subjects tested were protected by this dose of the drug, whereas the incidence of seasickness in two placebo groups was 67 percent and 92 percent respectively. The only side effect from α-ethyl-α-phenyl-glutarimide reported by the subjects was slight drowsiness, usually reported as calming. This mild sedative or calming action, related by D. Tyler in *Current Therapeutic Research 3*:250 (June) 1961, suggests an additional desirable action for those persons who suffer from excessive anxiety and tension when travelling by air. α-Ethyl-α-phenyl-glutarimide was supplied as Doriden by Ciba, Inc.

SYLVIA SCHMIDT

Betamethasone—A New Corticosteroid

Betamethasone (16β-methyl-9α-fluoro-prednisolone) has been subjected to a pilot trial in 23 patients. In all but one of these it proved to be an effective and extremely potent steroid. Side effects commonly associated with steroid therapy do not appear, so far, to be noticeably different with the new steroid. Facial mooning has been observed and there has been an increase in appetite and a gain in weight. In no case has there been any disturbance of serum electrolytes. Dyspepsia has been much less than with prednisolone and it appears that 1 mg. of betamethasone is marginally more potent than 1 mg. of dexamethasone, 4 mg. triamcinolone, or 8 mg. of prednisolone. This report by Glyn *et al.* appeared in *Brit. Med. J.* page 876 (Mar. 25) 1961.

WILLIAM E. JOHNSON

Treatment Of Open Angle Glaucoma With A New Stabilized Form Of Epinephrine

A complex formula resulting from the reaction between epinephrine and boric acid is stable for up to a month, when properly sealed. Vaughan *et al.* studied the effects of this compound on open angle glaucoma. The results are recorded in *Arch. Ophthamol. 66*:232 (Aug.) 1961. The drug, supplied by Barnes-Hind as BH 635 was found to be nonirritating to the ocular tissues. Epinephrine lowers intraocular pressure by decreasing the rate of aqueous production. The solution of the new complex was buffered to *p*H 7.4. At this higher *p*H greater concentration of the corneal tissues is achieved. The nonirritating properties also afford less dilution of the drug by the tears. In the small sampling conducted for this study the results indicate that BH 635 is at least as effective as other forms now available. The solution is stable, when unopened, for at least three years and for at least one month after opening, when properly resealed.

RICHARD H. HARRISON

WM-1127 In Treatment Of Insomnia In The Aged

A recent development has allowed molecular linkage of chloral hydrate with hexylene glycol to produce a hypnotic in palatable tablet form (WM-1127). Bare and Pepino report in the *J. Am. Geriatrics Soc. 9*:686. (Aug.) 1961, that the soporific effect of this new tablet form of chloral hydrate was evaluated in 56 geriatric patients in a home for the aged, by use of the double-blind technique. The initial dose was one 800 mg. tablet (representing 500 mg. of chloral hydrate) and this was repeated in 30 minutes if the patient was not asleep. Of those who received chloral hydrate, 87.9 percent were asleep within ninety minutes, as compared to 65.1 percent of the placebo group. Stimulation rather than sedation occurred in 5.3 percent of patients given chloral hydrate, and 16 percent with placebos. The absence of side effects and local irritation (especially of the gastrointestinal tract) indicated that this form of chloral hydrate is a safe and effective agent for managing insomnia in the aged. Wallace Laboratories supplied WM-1127 and placebo tablets.

SYLVIA SCHMIDT

Chlormezanone: A New Tranquilizer As Used In Dermatology

Chlormezanone is one of several substituted methathiazonones. This group is known to have central nervous system depressent properties and they are effective muscle relaxants. Chlormezanone does not induce hyperreflexia and has little sedative action. This study was conducted by Cornbleet and reported in *Antibiotic Med. & Clin. Therapy 8*:84 (Feb.) 1961. The purpose of this paper was to determine whether a tranquilizer would benefit a patient also using standard remedies for skin conditions. Many of the itching states and psychologic results from the appearance of a diffuse eruption produce effects of nervousness, irritability, insomnia, anxiety, fear and agitation. The dosage ranged from 100 mg. twice a day to 200 mg. three times daily. There was very little incidence of toxicity. In no case was it necessary to stop the drug. A soothing effect was gained without interferring with normal activities or alertness. The patients became more tractable and gave better cooperation. They were in better humor and less hyperkinetic and scratched less, yet remained singularly free of drowsiness.

RICHARD H. HARRISON

Experimental Spinal Anesthesia

The spinal anesthetic activities of 3-bromo-4-(2-diethyl-aminoethoxy)-S-alkoxyaniline and homologues were determined in rabbits by Gonzalez *et al.* and reported in the *J. Med. Pharm. Chem. 3*:555 (May) 1961. Activity increased gradually with the length of the 5-alkoxy chain. The hexoxy homologue was found to be 71 times more active than procaine. The shorter homologues produced anesthesia of short duration.

KENNETH W. HUCKENDUBLER

A New Synthetic Penicillin PA-248

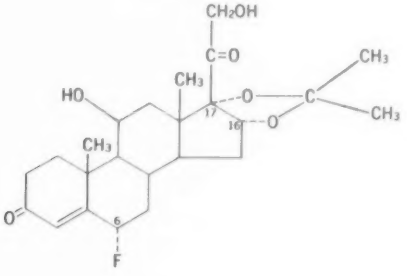
a-Phenoxypropyl penicillin (PA-248) is a new synthetic penicillin. Its potential therapeutic value has been assessed by determination of its antibacterial spectrum *in vitro*, in conjunction with measurements of serum levels after oral administration in 28 subjects. Studies with the potassium salt of a-phenoxypropyl penicillin show that, after oral administration of single 250 mg. doses, PA-248 produced peak serum levels (in ug. per ml.) approximately four times as high as those of penicillin V and 20 percent higher than those of phenethicillin. Correlation of these relative serum levels with *in vitro* results indicates that: I. the three oral penicillins will be equally effective against sensitive staphylococci; 2. PA-248 will be the most effective of the three oral penicillins against resistant staphylococci; and 3. PA-248 will be the most effective of the three oral penicillins in streptococcal infections. G. Williamson *et al.* reporting in *The Lancet I:847* (Apr. 22) 1961 add that the three oral penicillins are less effective than penicillin G against gram-negative cocci and bacilli. PA-248 was supplied by Messrs. Pfizer, Ltd.

SYLVIA SCHMIDT

Timely Drugs

Cordran

GENERIC NAME AND CHEMICAL NAME AND STRUCTURE: Flurandrenolone; 6-alpha-fluoro-16-alpha-hydroxyhydrocortisone 16,17-acetonide.



INDICATIONS: Symptomatic treatment of steroid-responsive dermatoses.

SIDE EFFECTS AND CONTRAINDICATIONS: Do not use in presence of tuberculosis of skin. Do not use in the eyes. When infections are present and do not respond promptly to treatment, discontinue this medication until the infection has been controlled by other measures. Patients with superficial fungus or yeast infections should be treated by additional measures. Sensitivity to the drug may develop.

DOSAGE: Cream: For moist, weeping lesions, rub a small quantity of cream gently into the affected areas 2 or 3 times daily. Vigorous application is not necessary and may damage the skin. Ointment: For dry, scaly lesions, apply a small quantity of ointment as a thin film to the affected areas 2 or 3 times daily.

PREPARATIONS: Cream containing 0.5 mg./Gm. flurandrenolone; Ointment containing 0.5 mg./Gm. flurandrenolone; Cream containing 0.5 mg./Gm. of flurandrenolone and 5 mg./Gm. of neomycin sulfate; Ointment containing 0.5 mg./Gm. flurandrenolone and 5 mg./Gm. flurandrenolone and 5 mg./Gm. of neomycin sulfate.

PACKAGING: 7.5 and 15 Gm. tubes.

SUPPLIER: Eli Lilly and Company.

Ionamin

CHEMICAL COMPOSITION: Phenyl-tert-butylamine as a resin complex with sulfonated polystyrene.

INDICATIONS: Sympathomimetic anorexic agent. Sustained release action by ion exchange of the actions in the gastrointestinal fluids with the resin complex.

SIDE EFFECTS: Mild central nervous stimulation, insomnia, and dryness of mouth.

PRECAUTIONS: Caution in patients with hypertensive and cardiovascular disease.

DOSAGE: One capsule (15 or 30 mg.) daily before breakfast or 10 to 14 hours before retiring.

PREPARATIONS: Capsule, each containing 15 mg. (grey and yellow capsule) and 30 mg. (yellow capsule) phenyl-tert-butylamine as a resin complex.

PACKAGING: Bottles of 100 and 400 capsules each.

SUPPLIER: Strasenburgh Laboratories.

Renese

GENERIC NAME AND CHEMICAL NAME: Polythiazide; 2 methyl-3,4-dihydro-3-(2,2,2-trifluoroethylthiomethyl)-6-chloro-7-sulfamyl 1,2,4,-benzothiadiazine 1, 1 dioxide.

INDICATIONS: All conditions in which effective diuretic therapy is desired. Especially useful in congestive heart failure, renal edema, cirrhosis, toxemia of pregnancy. Exhibits antihypertensive effect when used alone or with other antihypertensives.

SIDE EFFECTS AND CONTRAINDICATIONS: Possible electrolyte imbalance (early symptoms include fatigue, muscle cramps, and nausea), and rise in serum uric acid levels. Observe patients carefully with severe derangement of metabolic processes and cirrhosis. Hypokalemia on administration of digitalis may occur due to increased sensitivity to digitalis. Precautions should be taken in patients with chronic renal disease against renal failure. Nausea, vertigo, weakness, fatigue or maculopapular skin rash infrequently occurs. Might reduce arterial responsiveness to norepinephrine and augment the paralyzing action of tubocurarine.

DOSAGE: Edematous conditions: Maintenance dose is 0.5 to 4 mg. daily, adjusted for optimum patient response. Usual initial dose is 1.0 mg. daily. Congestive heart failure and hypertension: Maintenance dose is 1 to 4 mg. daily, adjusted for optimum patient response. Severe or refractory cases may require higher doses. Usual initial dose in mild cases is 2 mg. daily; in severe cases, 4 mg. daily.

PREPARATIONS: Tablets, scored, containing 1, 2 and 4 mg. polythiazide.

PACKAGING: Bottles of 30 tablets.

SUPPLIER: Pfizer Laboratories.

Surgicel

CHEMICAL COMPOSITION: Oxidized cellulose, made by converting alpha-cellulose, as cotton linters, to viscose in an alkaline organic solvent. The regenerated cellulose is spun into threads and knitted into gauze. The oxidation step modifies the basic cellulose by converting the primary alcohol radical into the carboxyl group.

INDICATIONS: Control of hemorrhage. The material is absorbable and its hemostatic effect is greater when applied dry. Moistening with water or saline is not recommended.

SIDE EFFECTS AND CONTRAINDICATIONS: No instances of toxicity, intolerance, and sensitivity. No contraindications. Avoid excessive wadding during application.

PREPARATION: Sterile knitted fabric strips: 2" x 14"; 4" x 8"; 2" x 3". Carded fiber pads: ¼" x ¾" x 3".

SUPPLIER: Johnson and Johnson.

CONTROL OF POISONINGS

edited by **ALBERT L. PICCHIONI,** *Director, Arizona Poisoning Control Program*

Treatment of Extrapyramidal Reactions to Phenothiazine Tranquilizers

► EXTRAPYRAMIDE REACTIONS are common side effects of the phenothiazine derivatives. Any of these drugs may initiate these effects, although the incidence is much greater with the drugs that are more potent therapeutically.[1, 2,3] In a recent survey involving 3,775 patients treated with tranquilizers of the phenothiazine group, it was shown that 1,472 of these patients developed extrapyramidal reactions.[3] The drugs included chlorpromazine (Thorazine), perphenazine (Trilafon), prochlorperazine (Compazine), trifluopromazine (Stelazine) and thiopropazate (Dartal). The extrapyramidal reactions consisted of the following types:[3]

1. *Akinesia:* weakness and muscular fatigue.
2. *Dyskinesia* or *Dystonia*: abrupt onset of retrocollis, torticollis, facial grimacing and distortions, labored breathing, oculogyric crisis and involuntary muscle movements which may be accompanied by opisthotonos.
3. *Parkinsonism:* tremors, rigidity and increased salivation.
4. *Akathisia:* generalized motor restlessness, with inability to sit still.

Since any of the phenothiazine derivatives may initiate extrapyramidal sequelae, it has been suggested that the possibility of their recent administration be considered in the differential diagnosis of any acute, bizarre, involuntary motor syndrome.[3] It is also important to point out that extrapyramidal reactions have occurred in children following accidental poisoning with phenothiazine tranquilizers.[4]

The manifestations of abnormal extrapyramidal activity have been reported to disappear within several days after withdrawal of the phenothiazine drug.[5, 6] However, in view of the marked distress and apprehension induced by these attacks and the potential danger of laryngospasm which sometime results,[2, 7, 8] it would seem important to terminate the reaction as soon as possible.

The antiparkinsonism drugs are effective in relieving the drug-induced extrapyramidal reactions. However, the majority of these drugs are available only as oral preparations. They do not always produce a rapid response following oral administration.[8] Further, patients who develop trismus, dysphagia, or protrusion of the tongue as part of the extrapyramidal reaction may not be able to swallow the drug. Recently, a parenteral preparation, benztropine methanesulfonate (Cogentin) has been made commercially available. Intramuscular administration of 2 mg. of this chemical agent has been reported to alleviate the extrapyramidal reaction in 10 minutes with the maximum effect occurring within one-half hour.[3]

The antihistamine, diphenhydramine (Benadryl), has also been found to be effective in the treatment of the drug-induced extrapyramidal reaction. Since it has been available in a parenteral dosage form for several years, it has been tested by a number of investigators.[1, 2, 9, 10] In most instances the drug has been administered intravenously and relief from the extrapyramidal symptoms was reported to be prompt. For example, dyskinetic reactions, such as retrocollis, opisthotonos and protrusion of the tongue were reported by one investigator to disappear in a patient within 2 minutes following intravenous administration of 25 mg. of diphenhydramine.[9] Laryngospasm associated with the extrapyramidal reaction has also been reported to disappear promptly following this treatment.[2]

The skeletal muscle relaxant, methocarbamol (Robaxin) represents a third therapeutic class of drugs found to be effective in treating the drug-induced extrapyramidal reaction. Methocarbamol is available in a parenteral dosage form for intramuscular and intravenous injection. Sabel[8] has reported that a patient suffering from drug-induced opisthotonos, torticollis, oculogyric crisis, trismus and laryngospasm became completely asymptomatic 20 minutes following the intramuscular injection of 1 Gm. of methocarbamol. Plummer and co-workers[11] found that the slow intravenous injection of 1 Gm. of methocarbamol in a patient resulted in complete symptomatic relief from the extrapyramidal reaction within 5 minutes.

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Chlordiazepoxide (Librium) Poisoning

► CHLORDIAZEPOXIDE (LIBRIUM) is one of the newer psychopharmacologic agents. Recently a number of poisonings involving massive doses of this drug have been reported in the literature.[1, 2] One report[1] concerned two cases of unsuccessful suicidal attempts with chlordiazepoxide. One of the victims was a 44-year-old white female who ingested 875 mg. of the compound in one dose. She did not inform anyone of her action until the following day. She noted no ill effects except for ataxia and dysarthria which abated within 48 hours. The other patient, a 22-year-old white male with schizophrenia, consumed 1630 mg. of the drug in a 24 hour period. He displayed only ataxia and drowsiness and he was given coffee as the sole therapeutic measure. Apparent recovery occurred within 24 hours. Gastric lavage was not performed in either of the above patients, since many hours had passed between the time of the ingestion of the drug and the discovery of the incident.

Another clinical report[2] presents the case history of a 47-year-old female (diagnosed as paranoid schizophrenia) who intentionally ingested 1150 mg. of chlordiazepoxide in a period of 20 minutes. The overdose was followed by drowsiness and the patient fell asleep. Six hours later she awoke and performed household duties despite an unsteady gait, thickening of speech, and dysarthria. These symptoms became intensified following ingestion of whiskey. No treatment was given, since the suicidal attempt was not discovered until 45 hours after the incident. The patient recovered with no evidence of permanent damage.

These case reports, although limited in number, would tend to indicate that chlordiazepoxide is less toxic than many of the other tranquilizer drugs which have been reported to produce severe extrapyramidal symptoms, central nervous system depression and hypotension following overdose.[3, 4, 5]

The reports of these acute poisonings from the drug chlordiazepoxide should prove useful in the management of future poisonings following overdose as well as accidental ingestion of the drug by children.

Hypoglycemia—A Result of Alcohol Poisoning in Children

► ALTHOUGH ACUTE ETHANOL POISONING in children is infrequent, it seems important to call attention to Cummins' recent clinical report[6] on the subject because of a little known aspect of alcohol poisoning, hypoglycemia. Cummins described two cases in which small children ingested alcoholic fluids. The first case involves a 6-year-old negro boy who ingested an unknown quantity of gin. The patient became comatose and was in a state of constant convulsions. Amobarbital was administered in an attempt to control the seizures. Approximately 11-½ hours following ingestion of the gin, the blood alcohol level was 20 mg. percent and the blood sugar level was only 15 mg. percent. Following intravenous injection of 50 ml. of a 50 percent glucose solution, there was a marked decrease in convulsive activity. However, infrequent focal seizures, mainly involving the right arm and face, continued and additional amobarbital was given intravenously to control the seizures. Temperature, blood pressure, pulse, and respiration remained normal but the patient continued to be deeply comatose. Approximately 19-½ hours after poisoning, the patient suddenly developed respiratory and cardiovascular failure. Despite measures to maintain respiration and blood pressure, the patient died approximately 36 hours after poisoning.

The second case involved a 3-year-old negro girl who ingested approximately 20 ml. of cologne (85% denatured alcohol). This patient also became comatose and subsequently exhibited convulsions. Her blood sugar level, taken immediately after the first bout of seizures, was 22.5 mg. percent. During a second bout of convulsions she was given intravenously 10 ml. of 50 percent glucose solution and 5 ml. of calcium gluconate solution, whereupon all convulsive movements were terminated. Because the child was somewhat

acidotic, she was also given M/6 sodium lactate and 10 percent glucose by intravenous drip. She recovered and was discharged from the hospital three days after poisoning.

It is highly doubtful that central depressants have a place in the treatment of acute alcohol poisoning because of the danger of synergism and, consequently, added depression. However, the above case reports do suggest severe hypoglycemia as a possible feature of alcohol poisoning and indicate the need for blood glucose determinations and, possibly, the need for glucose therapy in the treatment of acute ethanol poisoning.

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3. News Bulletin No. 4, Arizona Poisoning Control Information Center, (Apr.) 1961, p. 2.

4. News Bulletin No. 11, Arizona Poisoning Control Information Center, (Nov.) 1960, p. 3.

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Salt Poisoning

► TWO CASE HISTORIES INVOLVING ACCIDENTAL TABLE salt (sodium chloride) poisoning have been reported in the recent past[1,2] which serve to emphasize the serious nature of this type of poisoning when infants are involved. In both instances, the babies received from their mothers oral preparations in which salt was erroneously substituted for sugar. It was estimated that each victim received 30 to 40 grams of sodium chloride during a 12- to 24-hour period. Both infants developed signs and symptoms typical of hypernatremia, namely, vomiting, hyperpyrexia, hyperpnea, and various neurological manifestations. The latter included alterations of consciousness varying from lethargy to coma and tremors involving muscles of the extremities and the extraocular muscles. Reflexes were symmetrically hyperactive and convulsions occurred. Follow-up studies revealed that one of the infants had sustained severe brain damage. At 15 months of age, approximately 14 months after accidental poisoning, the child was unable to sit up and muscle tone was markedly hypertonic. In addition, recurrent convulsions required continuous anticonvulsant therapy.

The mechanism by which hypernatremia causes the neurological complications is not known. Finberg and co-workers[3] have induced hypernatremia in kittens by the intraperitoneal administration of hypertonic solutions of sodium chloride. They found that the symptoms displayed by these animals resembled the neurological effects of salt poisoning in infants. These workers suggest that the effects of excess sodium chloride on the nervous system may be caused by the movement of water from the intracellular space to the extracellular compartment of the brain and by the cellular adjustments that accompany such a rapid shift. It has been estimated that if a 7 Kg. baby were to ingest 1 level tablespoonful (approximately 20 grams) of sodium chloride, a loss of 30 percent of intracellular water to the extracellular space in the brain would result.[1]

Miller and Finberg[1] found intermittent peritoneal dialysis to be a rapid and effective method for removal of excess salt in a baby, a victim of salt poisoning. They employed three dialyses using 5 percent glucose in water as the dialyzing solution. These investigators consider that peritoneal dialysis is eminently suitable for the removal of sodium and chloride because these are rapidly diffusible ions and constitute the principal solute of extracellular fluid. They also point out that with this method there is little danger of creating undue expansion of the extracellular fluid volume. Since the prognosis of salt poisoning cases involving infants has generally been poor, further clinical trials with intermittent peritoneal dialysis in the treatment of this type of poisoning appear to be warranted.

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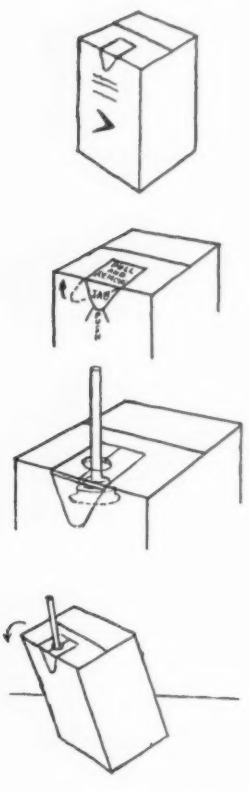
3. Finberg, L., Luttrell, O., and Redd, H.: Pathogenesis of Lesions in the Nervous System in Hypernatremic States: 2. Experimental Studies of Gross Anatomic Changes and Alterations of Chemical Composition of the Tissues, *Pediatrics 23*:46, 1959.

Notes + Suggestions

edited by CLIFTON J. LATIOLAIS

PLASTIC BAG-BOX LIQUID CONTAINER



A new system of packaging liquids consists of a plastic bag contained in a cardboard container. The plastic bag contains a wide mouth opening for easy filling and a closure to which is attached approximately 10 inches of tubing closed at one end. The filled container can be shipped without further packing. When ready for use, simply cut the end of the tubing and place a pinch clamp to regulate flow. The rectangular shape of the box reduces storage space considerably in comparison to round containers. Called *Liqui-Box*, this container is available in 2, 3, 5 and 6 gallon capacities 36 cents each depending on size. Although designed originally for the milk industry, the Liqui-Box system can be used advantageously in pharmaceutical liquid packaging and in hospital pharmacy operations.

Liqui-Box is available from the Liqui-Box Corporation, 1200 Corrugated Way, Columbus 3, Ohio.

PORTABLE HEATING ELEMENT FOR LIQUIDS

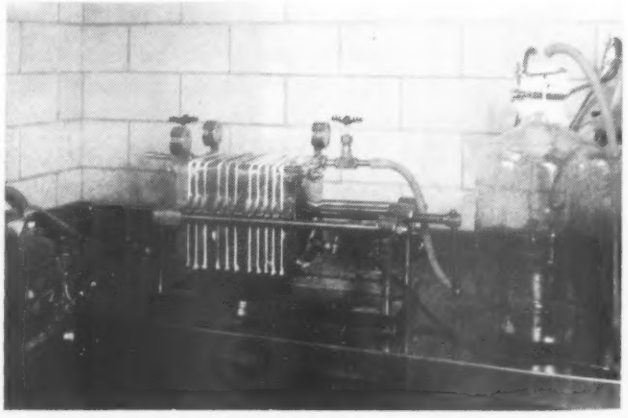
A completely self contained heating unit with a built in thermostat control is available for raising and maintaining any desired temperature of liquids within one deg. F. (plus or minus). The *Chill Chaser* consists of a stainless steel heating element (with thermostat adjustment) attached to a plastic handle with a 110 V electric cord. To heat any liquid, simply plug into electrical connection, immerse the heating element into the container of liquid to be heated and turn on the switch. Heating element is rigid and can be used as a stirring rod while heat is being applied. *Chill Chasers* are available in 5, 8, 10, 12, 15, 20, and 40 inch long heating elements with a cost range of from $22.50 to $45.00. Available from Still-Man Equipment Corp., 429 East 164th St., N.Y. 56, N.Y.

HYDROCORTISONE LOTION

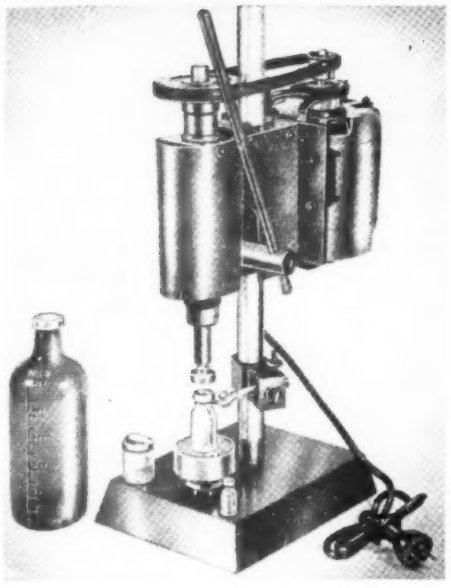
The following formula for hydrocortisone lotion was reported by R. E. Collard in the *Pharmaceutical Journal* 132:113 (Feb. 11) 1961.

Hydrocortisone alcohol	1.0
Methyl parahydroxybenzoate	0.15
Propyl parahydroxybenzoate	0.05
Cetomacrogol 1000	0.5
Isopropyl myristate	2.0
Monostearin, self-emulsifying	5.0
Propylene Glycol	5.0
Distilled Water *q.s.*	100.0

FILTER PRESS



Model 8/20 Filter Press (made by Hercules Filter Corp., 175 Ethel Ave., Hawthorne, N.J.) uses a minimum of 8 asbestos filter pads, has two by-passes for triple filtration (one for single), and is made of stainless steel construction. Built on a standard 21⅛″ base, it will accommodate up to 20 frames. The complete unit can be sterilized in a 16″ diameter autoclave.



ALUMINUM CAP CRIMPING MACHINE

The *Whirl-Seal* semi-automatic machine will crimp 8, 11, 13, 20, 30, 40, 43, or 48 mm. aluminum seals on any size cartridge, vial or other container from 1 ml. on up. It is possible to crimp more than 30 vials per minute. All contact parts can be removed for cleaning and sterilizing. Requires only 30 seconds to change from one size vial to another. Made of steel and aluminum, the *Whirl-Seal* requires only 6″ x 8½″ of table space. Operates on a ½ H.P. 110 V motor, weighs 22 lbs. Available from Forest Drug Products Co., 23 N. Loveland Ave., Kingston, Pa.

BALANCES - PRESCRIPTION, MANUFACTURING, ANALYTICAL

A useful catalog (available from the Christian Becker Division, Torsion Balance Company, Clifton, N.J.) illustrates the various types of balances useful in analytical prescription and manufacturing operations. Also included are specifications (of various models) such as weight capacity, sensitivity, sensitivity reciprocal, size of weighing pans, dimensions, etc.

ADHESIVE REMOVER

At an Institute on Hospital Pharmacy some of the enrollees indicated a problem in getting their nursing staffs to use isopropyl alcohol as an adhesive remover. One participant stated that in his hospital the problem was solved by introducing a "new" adhesive remover which was labeled "Dimethylcarbinol 99%." A slight color tint and a perfume was added to change the physical appearance and odor of this "new" adhesive remover—isopropyl alcohol.

ON PREPARING AEROSOLS

Many hospital pharmacists are interested in the preparation of pressurized aerosol pharmaceuticals. A valuable reference on this subject is a new book, *Aerosols: Science and Technology*, by H. R. Shepherd, published by Inter-science Publishers, Inc., New York. Its 548 pages include 16 chapters of useful technical information on the preparation of aerosols.

LIQUID & SEMI SOLID CRANK TYPE FILLER

Geyer Type C H Crank-Handle Filler is suitable for prepackaging thick liquids such as suspensions, emulsions, etc. and semi solid pharmaceuticals such as creams and ointments. With different sized filling tubes the machine will accommodate from ½ oz. to 16 oz. containers. The amount of fill is regulated by an adjusting screw which controls the length of the filling stroke. With each turn of the crank, an exact amount of the product to be filled is measured out, sucked from the hopper into the cylinder and discharged from the filling tube into the container. The hopper is of stainless steel and the valve cylinder and piston parts of monel and stainless steel. Production is rated at approximately 20 containers per minute. The hopper has a 12 gallon capacity. Filler is 18″ wide by 30″ deep x 32″ high. Available from the Filler Machine Co. Inc., 10 Penn Ave., Philadelphia 11, Pa.

THE LAW

and hospital pharmacy

edited by GEORGE F. ARCHAMBAULT

► *The Division of Chronic Diseases, U. S. Public Health Service, U. S. Department of Health, Education, and Welfare, has recently released Public Health Service Publication No. 827, "Nursing Home Standards Guide" (available U. S. Government Printing Office, Superintendent of Documents, Washington 25, D. C., price: 45 cents).*

Every practitioner of pharmacy and in particular every hospital pharmacist should be familiar with the contents of this manual. Not only is the information important in the discharge of one's professional responsibilities but also in connection with one's civic responsibilities. In my opinion this is "must" reading for the informed hospital pharmacist.

The section on "Pharmaceutical Services" deals with such subjects as Advisory Pharmacist, Automatic "Stop Orders," Storage, Packaging and Labeling of Pharmaceuticals, Disposition of Pharmaceuticals, Records, Stock Supplies and Special Provisions for Bulk Pharmaceuticals.

Reproduced below is the section relative to "Pharmaceutical Services."

Pharmaceutical Services

Advisory Pharmacist

Each nursing home should have as a basic minimum an advisory pharmacist (or a pharmaceutical advisory committee composed of licensed pharmacists) to advise the administrator concerning pharmaceutical services, drugs, and policies. The advisory pharmacist or committee should help the administrator understand and comply with all applicable Federal, State, and local laws concerning pharmacy practices and pharmaceuticals.

Automatic "Stop Orders"

The standards should provide for an automatic stop order for drugs in those instances where a reasonable termination period is not stated. Such a provision might be stated as follows: "Medications shall be automatically discontinued after a period of 7 days unless otherwise specified by the attending physician or as otherwise required by law. No prescription shall be refilled without the specific authorization of the attending physician."

Storage, Packaging, and Labeling of Pharmaceuticals

Pharmaceuticals should be stored in locked cabinets. Only authorized persons should be in possession of keys to these cabinets. (*For design and construction of medication cabinets, see p. 45.*)

Narcotics, barbiturates, and other habit forming medications should be stored in a locked and securely fastened box or drawer in the medicine cabinet or closet. Any withdrawals from this box or drawer should be noted in the narcotics register book. (*See pp.* 14-15, and 19.) Poisons and medications marked "for external use only" should be kept separate from general medications and narcotics. This should be accomplished through the use of a separate storage cabinet for such articles or by partitioning the general medicine cabinet.

Biologicals and other medications requiring refrigeration should be kept in a refrigerator. If they are stored in refrigerators used for storing foods, the medications should be kept in a special locked tray or container which is clearly and legibly marked.

All medications should be kept in their original container unless transfer of the medication is done by or under the supervision of a pharmacist.

Each patient medication container should be clearly and adequately labeled in the pharmacy and should include such items as prescription number, name of drug, strength and quantity of drug, patient's name, date of issue, and name of pharmacist or licensed pharmacy.

Any pharmaceutical containers having soiled or damaged labels should be returned to the issuing pharmacist or pharmacy for relabeling. The contents of any medication container having no label or an illegible one should be destroyed immediately. Only a pharmacist should label, relabel, or alter labels on medication containers.

Disposition of Pharmaceuticals

Pharmaceuticals belonging to patients should be given to them when discharged or transferred if so authorized in writing by the attending physician. Unused quantities of prescription (legend) pharmaceuticals not given to a discharged patient under a physician's authorization should be destroyed or otherwise disposed of in accordance with applicable pharmaceutical laws and regulations.

Narcotics or barbiturates left by discharged patients should be disposed of in accordance with Federal and State laws and regulations. If the home maintains a bulk supply of pharmaceuticals which is under the supervision of a registered pharmacist, these narcotics should be returned to him for disposition.

Records

A narcotics record book should be maintained wherever narcotics are kept. This book should contain a record of all narcotics received, dates received, patients to whom the narcotics are given, dates given, physicians prescribing the narcotics, and persons administering them. This information should be kept in a manner that will comply with Federal, State, and local laws governing the handling and use of narcotics.

In addition to the narcotics record book, a daily narcotics inventory should be kept. The results of this inventory should be recorded and signed by the nurse responsible.

Retention of pharmaceutical records is subject to the provisions of State and Federal laws and regulations. In the absence of State law or regulation or where the State law or regulation does not specify a longer retention period, these records should be preserved for a minimum of 5 years to comply with Federal law (title 18, U.S.C. Section 3282).

Stock Supplies

Nursing homes which do not employ a registered pharmacist on a regular basis to supervise their pharmaceutical service, should be permitted to stock, and have on hand, only those items that are regularly available without prescription at a commercial pharmacy.

Special Provisions for Bulk Pharmaceuticals

Nursing homes wishing to stock bulk prescription pharmaceuticals should employ a full- or part-time pharmacist. This pharmacist should visit the home no less than 2 hours each week and should supervise the procurement, storage, maintenance, and handling of pharmaceuticals used in the nursing home. The pharmacist should also see that all Federal, State, and local regulations regarding the procurement, use, and storage of pharmaceuticals are properly complied with.

Nursing homes desiring to stock prescription pharmaceuticals in bulk form should provide a special locked room and only authorized persons should have keys to this room. (*See Pharmacy Area, pp.* 43-44.)

Bulk narcotics should be kept in a safe in the drug room. This safe should be kept locked and only opened when the supervising pharmacist is present.

All medications stored in the drug room or pharmacy should be inventoried monthly by the pharmacist or by a person supervised by him. Stocks should be dated on receipt to prevent the accumulation of obsolete or deteriorated items. Bulk stocks of narcotics should be inventoried at least weekly by the pharmacist. The results of both the general pharmaceutical and narcotics inventories should be recorded.

All bulk medication containers should be clearly and accurately labeled. These labels should indicate such items as: The nonproprietary name and trade name (if any) of the pharmaceutical, its strength, the original amount contained in the bottle, the lot or batch control number, and the name of the manufacturer.

Only a pharmacist should issue drugs from the nursing home stock supplies on a regular basis. In case of emergency, the charge nurse on duty should be permitted to issue those drugs necessary to meet an individual patient's needs. If for any reason the charge nurse is not available, during the emergency, the nursing home administrator should be permitted to issue the necessary drugs. When this is done, the person issuing the drug should leave a written record of the drugs removed from stock. The record should include: Name of drug, strength, amount, lot control number, manufacturer, source, date, time, signature of taker.

No drugs should be issued from nursing home stocks without a prescription or physician's written order. A copy of all such prescriptions or orders should be kept on file in the pharmacy for a period of 5 years.

► *Because law is a complex specialty made so because of the existence of a set of Federal laws, 50 sets of state laws, and many county and municipal laws and regulations, the author of the column strongly recommends that when specific legal questions arise, one should always consult an attorney, competent in the local law.*

S. S. HOPE RETURNS

Pharmacists representing national and state organizations met with Pharmacists Charles Dickerson and Fred McKinney aboard S. S. HOPE

► ASHP PRESIDENT JACK HEARD was among those welcoming the S. S. HOPE on her return to San Francisco on September 14. The official welcoming committee for pharmacy met on the deck of the S. S. HOPE to honor the two pharmacists who had served a year in the areas of Indonesia and Vietnam. They are Mr. Charles Dickerson of Pontiac, Michigan and Mr. Fred McKinney of Washington, D.C. Included on the welcoming committee for pharmacy were Louis J. Fischl representing the American Pharmaceutical Association; Charles R. O'Malley, secretary-treasurer of the Northern California Pharmaceutical Association; Charles Jackson, president of the Northern California Society of Hospital Pharmacists; Frank Frisch, representing the American College of Apothecaries; and Jack Heard, the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

Health Opportunity for People Everywhere (HOPE) is a privately sponsored, people-to-people program initiated at the request of The President of the United States. The S. S. HOPE served as a modern teaching-training hospital providing opportunity to professional personnel of the countries visited, to obtain up-to-date instruction in modern clinical and surgical treatment.

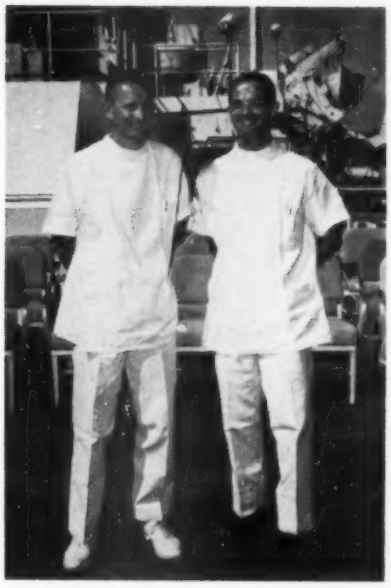
The S. S. HOPE is presently being refitted in San Francisco preparatory to resuming its service to humanity early in 1962. Subject to the continued financial support of the American people, it is anticipated that HOPE will visit South America next year and provide continued support to medical teaching-training programs in Southeast Asia.

Pharmacists interested in further information relative to their participation in the project may write to Dr. William B. Walsh, Project HOPE, Box 9808, Washington 15, D.C.

The official welcoming Committee for pharmacy met on the deck of the S. S. HOPE on her arrival in San Francisco. The two pharmacists honored after serving a year in the areas of Indonesia and Vietnam are shown (left to right) Charles Dickerson of Pontiac, Michigan and Fred McKinney of Washington, D. C. Members of the Committee shown (left to right) are Louis J. Fischl, Charles O'Malley, Jack Heard, Charles Jackson and Frank Frisch.

Charles O'Malley, secretary-treasurer of the Northern California Pharmaceutical Association greeting the Mayor of Osaka, Japan, as San Francisco's Mayor George Christopher and ASHP President Jack Heard look on

Back in Washington, D. C., Fred McKinney points out the location of Indonesia and Vietnam where he spent the past year as one of the pharmacists aboard S. S. HOPE. Welcoming Mr. McKinney is Mr. Vernon O. Trygstad, director of pharmacy service, Veterans Administration, Washington, D. C. and Mr. Robert A. Statler, a member of Mr. Trygstad's staff and chairman of the ASHP Committee for Project HOPE. Mr. McKinney, a graduate of University of Michigan, was a former Veterans Administration pharmacist at VA Hospital, Fayetteville, N. C.



The two pharmacists who served S. S. HOPE on her first voyage —Charles Dickerson (left) and Fred McKinney

S. S. HOPE arrives in San Francisco

as the president sees it—

JACK S. HEARD, *St. Francis Memorial Hospital, San Francisco, California*

► AS MY FIRST ITEM on this month's page I would like to congratulate Louis Jeffrey and John Webb on their election to the Presidency and Vice-Presidency and to Sister Berenice on her re-election to the position of Treasurer. The SOCIETY was fortunate to have such an excellent slate of candidates from which to choose this year. I am confident that Mr. Jeffrey will have an excellent administration in his year as President.

I believe that I can speak for the entire SOCIETY when I say that we are pleased that Dr. George Archambault has been elected to the Presidency of the American Pharmaceutical Association. He is the second hospital pharmacist in the history of the SOCIETY to have been elected to this high office. Dr. Don Francke was President of the A.Ph.A. during the 1951-2 term. Dr. Archambault has gained much knowledge and experience in the "inner workings" of the A.Ph.A. and has thoroughly proved his ability to understand and deal with a broad range of problems in pharmacy. His leadership of the American Pharmaceutical Association will benefit our entire profession.

At the risk of sounding somewhat provincial I must say that August was a big month in hospital pharmacy in California. The A.H.A. General Institute on Hospital Pharmacy was held in San Francisco, August 7 to 11. It was attended by about 120 pharmacists—a near capacity group. Using the facilities of the University of California Medical Center's Student Union, the students and faculty had good meeting areas and were well housed (some with spectacular views of the Golden Gate!) As in previous Institutes, about 60 percent of the students were attending an Institute for the first time. I believe that this attendance experience indicates that we still have a large reservoir of hospital pharmacists throughout the country who desire and are in need of training in our field. The basic role of the general institutes as a general training in the specialty of hospital pharmacy should continue as long as this great need exists. As the SOCIETY's continuing education program gets underway, I anticipate that the general institutes will continue (stronger than ever) and the specialized institutes may expand.

Also in August, I attended the seminar of the Southern California Society of Hospital Pharmacists at the beautiful setting of the University of California Conference Center at Lake Arrowhead. This is an example of another phase of educational programs of organized hospital pharmacy. The program featured such speakers as Warren Lansdowne, president of the American Pharmaceutical Association and Al Mannino of Geigy Pharmaceuticals. Mr. Lansdowne presented a stirring message—he outlined some of the difficulties ahead for the profession of pharmacy and realistically predicted that some casualties may occur in the changes that will be forced upon the profession. He urged that hospital pharmacists raise their professional standards and set a good example for the entire profession. I would comment that Cliff Latiolais' article, "Professional Survival —Its Dependence on Hospital Pharmacy"* might well be considered complementary to Mr. Lansdowne's remarks. I was given a period of time on the program to discuss the current programs of the ASHP and how they might be implemented by hospital pharmacists.

I am happy to report to you that I had the opportunity to attend the welcoming ceremonies for the S. S. HOPE on its arrival in San Francisco on September 14. Along with Louis Fischl, Frank Frisch, Charles Jackson, and Charles O'Malley, who were representing the American Pharmaceutical Association, the American College of Apothecaries, the Northern California Society of Hospital Pharmacists, and the Northern California Pharmaceutical Association respectively, I had been invited to be a member of the official welcoming committee. The ceremonies were colorful and impressive; I believe that the presence of a number of civic dignitaries (including Mayor Christopher), representatives of professional organizations, and a large crowd was most heartening to the HOPE's staff and crew who had been away for an entire year on their praiseworthy mission. Charles Dickerson and Fred McKinney, the HOPE's pharmacist, reported to us that they had a busy time on their trip and that their professional talents were fully utilized in both service and teaching. Since the HOPE will be inactive until early next year, most of the personnel will go on to other pursuits pending decision on the time and destination of the next trip. All of us in pharmacy can be proud that our profession was so well represented and that it had such an important role in bringing "Health Opportunity to People Everywhere."

*AM. J. HOSP. PHARM. *18*:272 (May) 1961.

News

Apple Receives Lascoff Award

William S. Apple

William S. Apple, secretary and general manager of the American Pharmaceutical Association, has been designated to receive the American College of Apothecaries' 1961 J. Leon Lascoff Memorial Award. The award, named in honor of the famous pharmacist one of the founders of the A.C.A., J. Leon Lascoff, is presented to that individual who, in the opinion of the committee, has contributed the most to the advancement of professional pharmacy.

By his forthright leadership in building the type of association that American pharmacy must have and his efforts on behalf of pharmacy in the defense of the antitrust case in California, Dr. Apple has displayed the qualities which make him a most suitable candidate for this award. In slightly over two years as secretary of the A.Ph.A., he has built a staff and instituted policies which will insure the profession of pharmacy an effective voice in a complex changing environment.

Dr. Apple's pharmaceutical background has been one of outstanding service. In education, as head of the Department of Pharmacy Administration at the University of Wisconsin; in association work, as Vice President, President and Chairman of the Board of Directors of the Wisconsin Pharmaceutical Association; in retail pharmacy, registered in the State of Wisconsin and in the Armed Services as a major assigned to the Staff of Fleet Admiral Nimitz, he has performed efficiently and effectively.

The award was presented to Dr. Apple at the convention of the American College of Apothecaries on October 2 at the Jack Tar Hotel in San Francisco, California, the scene of the recent court battles.

Past recipients of the J. Leon Lascoff Memorial Award include: Sister M. Jeanette, P. A. Foote, Charles V. Selby, Don Francke, Robert L. Swain, George Urdang, Robert P. Fischelis, Max N. Lemberger, Leslie M. Ohmart, John B. Heinz, Leroy A. Weidle, Sr., Hugo H. Schaefer, Louis J. Fischl and Frederick D. Lascoff.

► Nicholas G. Karalis has accepted a position as chief pharmacist at the Faxton Hospital, Utica, New York. Mr. Karalis received his Master of Science degree from Massachusetts College of Pharmacy in June, 1961 and completed his internship requirements at the Massachusetts General Hospital and Peter Bent Brigham Hospital in Boston. Mr. Karalis was formerly a Supervisor in the Department of Pharmacy at the Albany Medical Center Hospital, Albany, New York.

► New Appointments to the Reference Committee of the *American Hospital Formulary Service* include Windsor C. Cutting, M. D., professor of experimental therapeutics, Stanford University, School of Medicine, Palo Alto, California, and Frank T. Maher, Ph.D., M.D., Section of Clinical Pathology, Mayo Clinic, Rochester, Minnesota.

► Tom Sisk, president of Ohio Society of Hospital Pharmacists (1960-1961) was presented the Geigy Leadership Award by Ken Michael, representative of Geigy Pharmaceuticals, at the twenty-second Annual Convention of the OSHP recently held in Columbus, Ohio. The award, an inscribed bronze mortar with a pestle which can be used as a gavel, was created to honor pharmacists in hospital practice for demonstrated qualities of leadership.

Mr. Sisk not only has served as president and secretary of the OSHP, but is an active member of the American Pharmaceutical Association, American Society of Hospital Pharmacists, Cleveland Society of Hospital Pharmacists, Lorain County Pharmaceutical Association and the Ohio State Pharmaceutical Association. He was graduated from Duquesne University, School of Pharmacy, Pittsburgh, Pa., and is now Chief Pharmacist at St. Joseph Hospital in Lorain, Ohio where he has been for the past sixteen years.

Kenneth Hanson to Attend Industrial College

Kenneth E. Hanson, U.S. Public Health Service pharmacist officer and president of the Washington, D.C., Branch, American Pharmaceutical Association, has been named this year's candidate from the Department of Health, Education, and Welfare to attend the Industrial College of the Armed Forces at Ft. Leslie J. McNair, Washington. Commander Hanson's nomination was made by Surgeon General Luther L. Terry and is for a one year period beginning August 17, 1961.

A native of Maine, Commander Hanson is a graduate of the Massachusetts College of Pharmacy, Boston. In addition to his office with the D.C. Branch of the A.Ph.A., and membership in the American Society of Hospital Pharmacists, he is a member of the Maryland Association of Hospital Pharmacists, Association of Military Surgeons, and Public Health Service Commissioned Officers Association.

Selection of Commander Hanson for this high honor was made as a result of his distinguished career in the Public Health Service, where he is currently serving as deputy chief, Health Resources Branch, Division of Health Mobilization, Office of the Surgeon General, and his added services to the profession of pharmacy.

The mission of the Industrial College of the Armed Forces is "to conduct courses of study in the economic and industrial aspects of national security under all conditions, giving due

News

consideration to the interrelated military, logistical, administrative, scientific, technological, political, and social factors affecting national security, and in the context of both national and world affairs, in order to enhance the preparation of selected military officers and key civilian personnel for important command, staff, and policy-making positions in the national and international security structure."

Other pharmacists who have received this honor in the past are Arnold H. Dodge, chief, Health Resources Branch, Division of Health Mobilization, and Reede Ames, Public Health Service officer presently on detail to the Office of Civil and Defense Mobilization.

► Miss Ingar Hedgard, pharmacist at the Military Hospital in Stockholm, Sweden, is spending three months at University Hospital in Ann Arbor, Michigan under the Visitors' Exchange Program sponsored by the American Society of Hospital Pharmacists. Following Miss Hedgard's stay in Ann Arbor, she will tour the United States, visiting hospitals in Chicago, San Francisco, Los Angeles, Salt Lake City, Washington, D.C., Philadelphia, and New York City.

► Don E. Francke, editor of the American Journal of Hospital Pharmacy and director of pharmacy at University Hospital, Ann Arbor, Michigan, attended the 21st International Congress of Pharmaceutical Science in Pisa, Italy, September 4-8, 1961. The Congress is organized by the Scientific Section of the International Pharmaceutical Federation (FIP) and meets every other year.

Following the Pisa Congress, Dr. Francke participated in meetings of the FIP Bureau and Council held in Athens, Greece. He serves as a member of these bodies as a Vice-President of the Federation.

AIHP Awards Urdang Medal to Spanish Pharmacist-Historian

The seventh George Urdang Medal will be conferred upon General (Dr.) Rafael Roldán y Guerrero, pharmacist-historian of Madrid, Spain, by the American Institute of the History of Pharmacy.

The George Urdang Medal honors unusually distinguished historical publications on pharmacy appearing anywhere in the world.

In recommending the Spaniard as the seventh Urdang Medalist, the evaluation committee cited particularly his five volume work (in press), *Diccionario Biográfico y Bibliografico de Autores Farmacéuticos espanoles, desde el siglo VIII hasta 1944*. The dictionary, which in part has appeared serially, covers nearly 2500 Spanish pharmaceutical authors between the eighth century and the present.

Aside from a number of other historical publications on pharmacy, General Roldán has acted as secretary and president of the Spanish Society for the History of Pharmacy and director of its journal; permanent secretary of the Royal Spanish Academy of Pharmacy; and was formerly assistant professor of the history of pharmacy of Central University. He has published on the history of military pharmacy, and was instrumental in founding a unique museum of the history of military pharmacy at Madrid.

A presentation ceremony conferring the Urdang Medal upon General Roldán will be conducted during the International Congress of the History of Pharmacy at Innsbruck, Austria, in September. The Medal assumes an added memorial significance with the death on June 27, 1960, of George Urdang, himself a distinguished historical author who served as the first Director of the American Institute of the History of Pharmacy from 1941 to 1957.

Other recipients of the Medal, since the first one was struck in 1952 on the 70th birthday of George Urdang, have been: Josef A. Häfliger of Switzerland; Eugéne-Humbert Guitard of France: Rafael Folch Andreu of Spain; D. A. Wittop-Koning of the Netherlands; Maurice Bouvet of France; and Otto F. Zekert of Austria.

► Frank J. Steele, Sc.D., chief pharmacist at the Greenwich Hospital Association, Greenwich, Connecticut, is teaching a night course in high school chemistry for the Greenwich Board of Education. The course is offered to those working for high school diplomas.

►William Owen Hays has been appointed director of pharmaceutical service for the Orr, Brown and Price Company Service Drug Wholesaler of Columbus, Ohio. Mr. Hays is a graduate from Ohio State University School of Pharmacy and has had experience in hospital pharmacy, having been director of pharmacy at the U.S.V.A. (Crile) Hospital in Cleveland from 1947 to 1952. He has been active in national and local pharmaceutical organizations and holds membership in the American Society of Hospital Pharmacists as well as numerous other organizations.

► The Fourth Annual National Industrial Pharmaceutical Research Conference will be held on June 10-13, 1962, at King's Gateway, Land O'Lakes, Wisconsin. The Conference will cover methods and bases for the preparation of superior pharmaceutical solutions from the following standpoints: (1) Solubilization and solubilizing agents; (2) Buffers and preservatives; and (3) Suitable aqueous and non-aqueous vehicles.

The research conference is sponsored annually by the Extension Services in Pharmacy of the University of Wisconsin, in cooperation with the School of Pharmacy, Madison. Contact for additional information may be made through Richard S. Strommen, Extension Services in Pharmacy, 301 Pharmacy Building, University of Wisconsin, Madison 6, Wisconsin.

► HUGH F. KABAT has been appointed assistant professor of pharmaceutical technology and hospital pharmacy at the University of Minnesota, Minneapolis. Mr. Kabat received his bachelor's and master's degrees in hospital pharmacy at the University of Michigan College of Pharmacy and served an internship at University Hospital in Ann Arbor. He is the first recipient of a doctor's degree in pharmacy administration from the University of Colorado in Boulder.

► CAPT. JAMES W. STOVER completed the second half of the Army's new pharmacy residency program at Walter Reed General Hospital, Washington, D. C., last week. One of the Army's first two residents in hospital pharmacy, the captain was assigned to Walter Reed last summer after completing the first half of the two-year program—a year of academic training—at the University of Michigan.

His next assignment will be the Medical Field Service School, Brooke Army Medical Center, Ft. Sam Houston, Texas, where he will attend a nine month Army Medical Service Officers Career Course. Capt. Lewis C. Miner, Pharmacy Service chief at Walter Reed General Hospital, is the director of the program at Walter Reed.

Nominations Invited for First Edward Kremers Award

Nominations for the first Edward Kremers Award for distinguished historical writing about pharmacy by an American will be accepted until 31 December 1961, according to the American Institute of the History of Pharmacy. Established by the Institute in 1961, the award will help to commemorate a learned pioneer of historical work in American pharmacy who also usually is considered one of the men most influential in American pharmaceutical education during his lifetime (1865-1941).

According to the Institute's Director, Glenn Sonnedecker, the Kremers Award will be bestowed upon an American citizen "for an original publication or series of related articles about historical aspects of pharmacy. Unpublished manuscripts also may be considered. An expert committee," he noted, "will judge the entries on the basis of competence of research, interpretation and presentation."

An official form upon which to recommend a candidate for the first Edward Kremers Award may be obtained by request to the Institute's Secretary, Ernst W. Stieb, 356 Pharmacy Building, Madison 6, Wisconsin.

► THE INDUSTRIAL PHARMACY SECTION of the American Pharmaceutical Association will hold an Eastern Regional Meeting on Monday, November 13 at the Park Sheraton Hotel in New York City. Devoted to pharmaceutical technology, the one-day meeting will include numerous papers and discussions of interest to pharmacists in industry. Information on the meeting can be obtained from Dr. C. J. Swartz, arrangements chairman, Ciba Pharmaceuticals, Summit, New Jersey.

Dates Changed for Iowa Seminar

The Annual Clinical Hospital Pharmacy Seminar originally scheduled at the State University of Iowa in November has been changed to January 21-24, 1962. The Seminar will follow the same general plan as originally announced [see THE JOURNAL 18:418 July (1961)]. The change in schedule was made due to a conflict with the Second Specialized Institute on Hospital Pharmacy which is being held in Chicago, November 5-8. For additional information and registration write to William D. Coder, Extension Division, State University of Iowa, Iowa City, Iowa.

Polish Scientific Congress

The Polish Pharmaceutical Association has announced its Sixth Scientific Congress to be held in Wrockaw in the second half of September, 1962, according to Dr. L. Krowczynski, general secretary of the Polish Pharmaceutical Association.

The principal subject of the Congress will be progress in the field of galenical pharmacy. The reports will be delivered at the plenary sessions and in the following sections:

1. Section of applied pharmacy
2. Section of synthetic drugs
3. Section of medical plants
4. Analytic section
5. Section of pharmacology
6. Section of history of pharmacy

Doc. Dr. Zenon Olszewski has been appointed as the chairman of the Organizing Committee.

Scientific reports for delivery at the Congress should be sent before February 28, 1962 in typewritten form ready for printing, with the summaries in English and Russian. They should be mailed to the Secretary's Office, Sixth Scientific Congress of the Polish Pharmaceutical Association, Wrockaw, 38 Szewska-street, Department of Applied Pharmacy, Medical Academy of Wrockaw.

A Program Committee consisting of the Chairmen of the Sections and their deputies will qualify the reports submitted for presentation.

Further information about the Congress may be obtained by writing to the Secretary's Office at the address given above.

SELECTED PHARMACEUTICAL ABSTRACTS

and summaries of other articles interesting to hospital pharmacists

edited by NORMAN HO

STERILIZING EFFECT OF ETHYLENE OXIDE

Some Observations on the Sterilizing Effect of Ethylene Oxide, Diding, Nils, Svensk Farmaceutisk Tidskrift 64:713, 1960. (Apotekens Kontrollaboratorium, Stockholm).

The advantage of ethylene oxide is that many materials such as plastics, and pharmaceutical preparations can be sterilized at ordinary temperature. However, the influence of ethylene oxide on each preparation must be investigated for any detrimental effects. Thus, several experiments were conducted to study the conditions of ethylene oxide sterilization of various materials and drugs. Three test organisms were used: *Staphylococcus aureus, Rhodotorula rubra,* and garden soil containing highly resistant bacterial spores. The concentration of ethylene oxide in the sterilization chamber was 1000 mg. per liter.

No detectable growth was obtained from glass and plastic (polyethylene) bottles closed with plastic lids and contaminated with resistant spores after 12 hours exposure for glass and 1.5 hours for plastic bottles.

To study the possibility of sterilizing aqueous solutions, the glass and polyethylene bottles containing varying volumes of sodium chloride solution were exposed to ethylene oxide for 12 and 24 hours. An amount of 2 ml. of solution was sterilized in 12 hours and 4 ml. in 24 hours in the glass bottle, whereas in plastic bottles the amounts were 4 and 16 ml. The results show that in a glass bottle, where the gas can only diffuse through the lid, it takes longer to obtain steriliy than in a plastic bottle where the diffusion surface is much larger. Furthermore, there is a limit to the ability of ethylene oxide to diffuse through aqueous solutions.

Procaine hydrochloride tablets contaminated with 2 percent soil as part of the tablet granulation were packaged in glass tubes and polyethylene film. No growth was obtained from the tablets after 6 hours exposure in glass tubes enclosed with polyethylene lid and 1.5 hours exposure in polyethylene film. The gas penetrated the tablet effectively and caused no physical or chemical change in the tablet. No demonstrable change in disintegrating time, hardness, and potency was seen.

NORMAN HO

SPECTROPHOTOMETRIC DETERMINATION OF 2-ETHYL-4-THIOCARBAMOYLPYRIDINE

Spectrophotometric Determination of 2-Ethyl-4-thiocarbamoylpyridine (1314 Th) in Pharmaceutical Preparations, Kraus, P. and Simane, Z., Czech. Pharm. 10:195 (April) 1961. (Research Institute of Tuberculosis, Prague, Czechoslovakia)

A spectrophotometric method for the determination of 2-ethyl-4-thiocarbamoylpyridine (1314 Th) in tablets and suppositories has been worked out. The determination is based on the formation of a brown-red colour with sodium aquoferricyanide solution (Hofmann reagent) in the presence of sodium bicarbonate.

Working directions: Dissolve the sample, containing 20 - 100 mg. of the active principle, in ethanol (20 - 50 ml.) and dilute to 100 ml. with water. Transfer 1 ml. of this solution into a 25 ml. volumetric flask, add 20 ml. of 6% solution of sodium bicarbonate, 2.5 ml. of the Hofmann reagent and make up to the mark with sodium bicarbonate solution. After 15 min. measure the produced colour at 475 mγ against the blank solution.

AUTHOR'S SUMMARY

VIRICIDAL EFFICIENCY OF DISINFECTANTS

Viricidal Efficiency of Disinfectants in Water, Berg, G., Chang, S., Clarke, N., and Kabler, P., Public Health Reports 76:565 (July) 1961. (Water Supply & Pollution Control Research, Sanitary Eng. Center, Public Health Service, Cincinnati, Ohio).

Data from recent studies of the efficiency of various disinfectants in inactivating enteric viruses in water appear to support the following summarizations: (1) Different types of enteric viruses vary widely in the degree of resistance to free chlorine. Polio virus, Coxsackie, and some ECHO viruses seem to be more resistant than coliform or enteric pathogenic bacteria. The free chlorine residuals required for inactivation depend on pH, temperature, and contact time. (2) Combined chlorine is considerably less viricidal than free chlorine, requiring higher concentrations or longer contact periods to achieve comparable inactivation. (3) Iodine is an effective vericide, but requires greater residuals and longer contact than hypochlorous acid. (4) Chlorine dioxide, ozone, and ultraviolet light may be useful disinfectants; however, their efficiency in water in comparison with that of free chlorine and the quantitative effects of pH and temperature have not been established.

AUTHOR'S SUMMARY

POLAROGRAPHIC AND PHOTOMETRIC DETERMINATION OF BENACTYZINE HYDROCHLORIDE

Polarographic and Photometric Determination of Benactyzine Hydrochloride, Vachek, J., Czech. Pharm. 10:187 (April) 1961. (Pharmaceutical and Biochemical Research Institute, Prague, Czechoslovakia).

Polarographic and photometric methods of determination of benactyzine hydrochloride are given. Both methods are based on the determination of the nitration product of benactyzine. In the polarographic method the height of the wave in an alkaline medium is determined following nitration. The photometric method is based on the determination of the yellow nitration product. Both methods are simple and benactyzine hydrochloride can be determined in substance and in tablets. The methods have the usual accuracy of polarographic and photometric work.

AUTHOR'S SUMMARY

SPECTROPHOTOMETRIC IDENTIFICATION OF 4-AMINOANTIPYRINE

A New Spectrophotometric Identification of 4-Aminoantipyrine as a Physiological Break-Down Product of Pyramidon in the Urine, Strell, M. and Reindl, S., Drug Research 11:552 (June) 1961. (Organic-Chemistry Institute of Technical College in Munich, Germany).

The reaction of p-dimethylamino cinnamic aldehyde with 4-aminoantipyrine and perchloric acid yielded a dye suitable for quantitative and qualitative determination of the a.m. compound in the urine as a break-down product of aminopyrine (Pyramidon®). An exact method has been worked out by means of a Beckman apparatus as well as a quick method using a rod-shaped immersion colorimeter.

AUTHOR'S SUMMARY

PAPER CHROMATOGRAPHY OF SUGARS

Paper Chromatography of Sugars, Fiser-Herman, M. and Jusic, D., Farm. Glas. 17:47-59 (Feb.-Mar.) 1961. (Institute for Clinical Chemistry, Faculty of Pharmacy, Zagreb, Croatia).

Paper chromatography has been applied to the identification of sugars in urine. Experience with numerous solvents and reagents for the detection of sugars on paper chromatograms are described. Best results were obtained with the isopropanol-acetic acid-water mixture of Riffart *et al.* which is especially valuable for the detection of fucose, xylose, uronic acids, and vitamin C; and with the butanol-pyridine-benzene-water, solvent of White and Hess which separates glucose from galactose, and xylose from arabinose very satisfactorily.

Development with aniline citrate for sugars generally and phloroglucine, orcine or urea reagents for ketoses, in combination with inspection under UV-light and in comparison to tests run on the same paper, permits of

indubitable identification of most sugars and sugar derivatives in urine.

AUTHOR'S SUMMARY

INFLUENCE OF ASEPTIC PREPARATION OF SOME DRUGS

Influence of Aseptic Preparation of Some Drugs Upon Their Sterility and Activity, Nerlo, H., Kuczynski, T., Acta. Pol. Pharm. 18:131-4 (Feb.) 1961.

The authors have prepared penicillin ointment, and some aqueous solutions (of glycose, atropine sulphate, pilocarpine hydrochloride, potassium iodide, boric acid and tannic acid) according to Pharm. Pol. III. The ointment and the solutions were prepared both in an aseptic box and on tables where no aseptic measures were observed. All the components used for preparing the solution and the ointment, as well as the glass containers, the grinders, and filters, were sterilized by routine methods.

The medicaments prepared both in the aseptic box and on the tables were tested for sterility. Twenty-four hours after preparation of the drugs had been completed, tests for sterility were carried out by the methods described in Pharm. Pol. III and in the Supplement to II Ph. Helv. V. The penicillin ointment was tested by an iodometric method described in Pharm. Pol. III.

It appeared that 60% of the solutions prepared under non-sterile conditions were air-contaminated, while only 11% of the solutions prepared in the aseptic box were found to be contaminated. Some solutions of atropine, pilocarpine and zinc sulphate, prepared in non-aseptic conditions, as well as most of the boric acid and potassium iodide were found to be sterile.

Penicillin ointment prepared on the tables where no safety measures against air-contamination were taken, was found to be 61% non-active after 11 months storage at room temperature, while of the same drug prepared in the aseptic box 34% was found to be inefficient after being stored for the same period of time.

AUTHOR'S SUMMARY

STERILIZATION BY GAMMA RAYS OF DRUGS IN AMPULS

Sterilization by Gamma Rays of Drugs in Ampules, Krowczynski, L., Zaduminski, M., Kotulowa, W., Acta Pol. Pharm. 18:125-29 (Feb.) 1961.

The authors sterilized by means of gamma rays cocarboxylase hydrochloride (dried), contaminated by bacteria and spores of *Clostridium welchii*, *Clostridium septicum* and by bacteria *Escherichia coli*. The source of gamma rays was a Cobalt bomb with Co^{60}.

The quantity of energy equivalent to 400,000 rep was sufficient to sterilize the preparation, not causing any decomposition; this was tested by chromatography.

In order to kill the same bacteria in an aqueous suspension, more energy was needed: for unsporing *Escherichia coli*— 800,000 rep, for sporing *Clostridium welchii* and *Clostridium septicum* 1,600,000 rep.

AUTHOR'S SUMMARY

APPLICATION OF PAPER CHROMATOGRAPHY AND ELECTROPHORESIS

Application of Paper Chromatography and Electrophoresis to the Assay of Pharmaceutical Products, Schriftman, H. and Shultz, R. C., Am. J. Pharm. Sci. 50:332 (Apr.) 1961. (Wyeth Laboratories, Inc., Radnor, Pa.)

Results comparable to conventional colorimetric and spectrophotometric methods have been obtained by paper chromatographic and electrophoretic methods. In several instances, where stability studies are involved or when the combination of drugs do not lend themselves to assay by the usual methods, it is concluded that the chromatographic and/or electrophoretic procedures are a practical applicable solution. Some of the modifications that are needed for applying these chromatographic and electrophoretic methods to pharmaceutical assays are discussed. In descending paper partition chromatography, by selection of appropriate solvent systems, or by paper electrophoresis, with selected pH buffer systems. The developed papergrams are sprayed with an appropriate color reagent and assayed quantitatively by photoelectric densitometry. The compounds treated in this manner are: phenylephrine hydrochloride, chlorpheniramine maleate, dextromethorphan hydrobromide, N-acetyl-p-aminophenol, meperidine hydrochloride, atropine, ethinyl estradiol, procaine and tetracaine hydrochlorides.

AUTHOR'S SUMMARY

PARABENS IN PHARMACEUTICAL FORMULATIONS

Potentiation of Preservatives (Parabens) in Pharmaceutical Formulations by Low Concentrations of Propylene Glycol, Prickett, P. S., Murray, H. L. and Mercer, N. H., Am. J. Pharm. Sci. 50:316 (Apr.) 1961. (Research Laboratories, Mead Johnson and Co., Evansville, Ind.)

Pharmaceutical formulations similar to simple syrups near neutral pH are difficult to preserve against microbial spoilage, which sometimes require high concentrations of preservatives, e.g., parabens. Since high preservative concentrations injure formulations' palatability, inclusion of an appropriate potentiator would be helpful. Potentiation of parabens by low levels of propylene glycol (PG) was investigated. Four groups, each consisting of three formulations were studied. Levels of PG (0, 2, and 5 percent) were constant in all groups, but the paraben levels differed for each formulation group with one group (control) containing none. Samples of each formulation were inoculated with bacteria, molds, and yeasts, respectively, then incubated up to six months. The low level paraben group showed strong potentiation by PG. The other two paraben groups demonstrated lesser degrees of potentiation. However, in short-time studies in which the formulations received multiple bacterial inoculations, PG potentiated even the highest concentration of parabens.

AUTHOR'S SUMMARY

SOLUBILIZING POWER OF TRITON WR-1339

Solubilization of Anti-inflammatory Steroids by Aqueous Solutions of Triton WR-1339, Guttman, D. E., Hamlin, W. E., Shell, J. W. and Wagner, J. G., Am. J. Pharm. Sci. 50:305 (Apr.) 1961. (Research Laboratories, The Upjohn Co., Kalamazoo, Mich.)

Clear solutions of anti-inflammatory steroids, which have concentrations of steroid considerably greater than the water solubilities of the steroids, are being sold commercially for ophthalmic use. The present study was undertaken to obtain quantitative data on the solubilizing power of Triton WR-1339 for three anti-inflammatory steroids. The apparent solubility of each of the steroids, prednisolone, methylprednisolone, and fluorometholone, in an aqueous solution of Triton WR-1339 was found to be linearly dependent on the percent Triton present. Both the slopes of the linear solubility plots and the water solubilities of the steroids are, in the order, prednisolone > methylprednisolone > fluorometholone. The marked difference in solubility of fluorometholone in aqueous solutions of Triton WR-1339 from the other two steroids having a 21-hydroxyl group indicates that an entirely different pharmaceutical problem is involved with the steroid having the type of side chain present in fluorometholone.

AUTHOR'S SUMMARY

STABILITY OF DIHYDROSTREPTOMYCIN OINTMENTS

Stability Studies of Dihydrostreptomycin Ointments, Cosgrove, F. P. and Poe, C. F., Am. J. Pharm. Sci. 50:148 (Feb.) 1961. (College of Pharmacy, University of Colorado, Boulder.)

Dihydrostreptomycin was used as the active ingredient in polyethylene glycol-type bases and in petrolatum base ointments. The different ointments were analyzed over a period of five years for loss in antibiotic activity. The polyethylene glycol ointments, when stored at 5°, lost less than ten percent activity in two years, and 20 percent or less in five years. The activity lost, when stored at 25°, was somewhat greater. The petrolatum base for dihydrostreptomycin was not satisfactory after long storage.

AUTHOR'S SUMMARY

COMBINATIONS OF IRON WITH DEXTRAN FOR INTRAMUSCULAR INJECTIONS

Production and Properties of Combinations of Iron with Dextran for Intramuscular Injections, Mioduszewski, Z., Mioduszewski, M., Acta Pol. Pharm. 18:135-48 (Feb.) 1961.

The authors attempted to obtain a complex combination of trivalent iron with dextran.

The product obtained from dextran, with a viscosity between 0.050 and 0.056 and a corresponding average molecular weight of about 3000 (by light scattering), showed with the reported content of iron (after sterilization) an adherent viscosity similar to the initial viscosity of the dextran.

Upon intramuscular injection, the prepared solutions showed in experimental animals therapeutic properties analogous to a similar foreign drug, but with a lower toxicity. Preliminary clinical experiments confirm the therapeutic activity of this drug.

The authors also investigated the parameters of hydrolysis fractionation in order to obtain a micromolecular dextran, suitable for obtaining a complex compound.

AUTHOR'S SUMMARY

PAN COATING TABLETS

Process for Pan Coating Small Batches of Tablets, Rednick, A. B., Nicholson, A. E. and Tucker, S. J., Am. J. Pharm. Sci. 50:174 (Feb.) 1961. (Smith Kline and French Laboratories, Philadelphia 1 Pa.)

A method is presented which permits the pan coating of small lots of tablets with production-size characteristics. This is readily accomplished by coating the tablets containing the active ingredient simultaneously with placebo tablets of the same dimensions. The procedure involves incorporating a small amount of reduced iron in the placebo, combining both the active and placebo tablets, coating the mixed bath of tablets and finally separating the active from placebo tablets by passing them through a magnetic selector.

AUTHOR'S SUMMARY

DETERMINIZATION OF PIPERAZINE

Determination of Piperazine Salts in Pharmaceutical Liquids, Pankratz, R. E., Am. J. Pharm. Sci. 50:175 (Feb.) 1961. (Fort Dodge Laboratories, Fort Dodge, Ia.)

A simple and accurate method is outlined for the determination of piperazine base and piperazine salts by a colorimetric method based on precipitation as the Reineckate. Control of pH is essential since acid solutions develop absorbance readings twice those of alkaline solutions.

AUTHOR'S SUMMARY

ASSAY OF ALKALOIDS

Assay of Certain Alkaloids in Nonaqueous Solution, Wang, S. M. and Hunter, R. W., Am. J. Pharm. Sci. 50:265 (Mar.) 1961. (Southern College of Pharmacy, Mercer University, Atlanta, Ga.)

A method is described for the assay of alkaloids or alkaloidal salts either in the pharmaceutical preparation of plant extract which is based on separating the alkaloids by ion exchange resin and determination of them in the nonaqueous solution, either by visual indicator method or potentiometry.

AUTHOR'S SUMMARY

DETECTING LEAKS IN AMPULS

Study of Various Methods for Detecting Leaks in Hermetically Sealed Ampuls, Artz, W. J., Gloor, W. T., Jr., and Reese, D. R., Am. J. Pharm. Sci. 50:258 (Mar.) 1961. (Smith Kline and French Laboratories, Philadelphia 1 Pa.)

Six methods for detecting leaks in hermetically sealed ampuls were studied. The results indicated that the autoclave-dye method was the most selective of those studied. An outstanding advantage of this method is that heat-sterilizable ampuls are sterilized and tested for leaks simultaneously, thus eliminating one step in processing. It was found that dye immersion has no effect on the autoclave time required for sterilization of a batch of one thousand 1-cc, ampuls. Other leak-detecting methods studied were: vacuum-dye, pressure-dye, fluorescent penetrant solutions, external air pressure, and dye immersion after autoclaving. The attributes and limitations of each of these are discussed. Also included is a discussion, with photographs, of physical characteristics of ampul leakers.

AUTHOR'S SUMMARY

STABILITY OF AQUEOUS SOLUTIONS OF NAPAP

Stability of Aqueous Solutions of N-Acetyl-p-aminophenol, Kosky, K. T., and Lach, J. L., Am. J. Pharm. Sci. 50:113 (Feb.) 1961. (State University of Iowa, College of Pharmacy, Iowa City.)

The hydrolysis of N-acetyl-p-aminophenol (NAPAP) in hydrochloric acid solutions of varying strengths at 70° and in buffered aqueous solutions in the pH range of 2 to 9 has been studied. The hydrolysis appears to be hydrogen and hydroxyl ion catalyzed. The overall rate of hydrolysis may be expressed by the equation of $kH + (H^+)(NAPAP) + kOH - (OH^-)(NAPAP)$. The energy of activation for the hydrolysis was calculated to be of the order of 17.5 K cal. per mole which is in good agreement with that reported for similar compounds.

AUTHOR'S SUMMARY

GASTROINTESTINAL ABSORPTION

Equipment and Methodology for Relating Gastrointestinal Absorption to Site of Drug Release, Eriksen, S. P., Swintosky, J. V., Serfass, E. J., Lin, T. H., Abrams, J., and Sturtevant, F. M., Am. J. Pharm. Sci. 50:151 (Feb.) 1961. (Research and Development Division of Smith Kline and French Laboratories, Philadelphia 1, Pa.)

A radio frequency generator operating at 500 kilocycles with a 2½ kilowatt maximum power output has been constructed and used for opening specially designed capsules at selected sites in the gastrointestinal tract without direct connection of the capsule to equipment outside the body. The procedure is particularly adapted to the study of gastrointestinal absorption as a function of site of drug release under normal physiologic conditions. The equipment and technique have been utilized in studies of salicylate absorption in dogs and appear applicable to absorption studies with human subjects.

AUTHOR'S SUMMARY

APPLYING ENTERIC FILMCOATS

Enteric Filmcoats by the Air-Suspension Coating Technique, Singiser, R. E. and Lowenthal, W., Am. J. Pharm. Sci. 50:168 (Feb.) 1961. (Scientific Divisions of Abbott Laboratories, North Chicago, Ill.)

A rapid, efficient method of applying enteric filmcoats by a modified Wurster Air-suspension technique is described. A cellulose acetate phthalate enteric filmcoating was applied to semiproduction size batches of ammonium chloride tablets. This method shows unique advantages over any coating method employing conventional coating pans. Smooth, uniform, pharmaceutically elegant enteric coatings are applied in a manner assuring passage of the U.S.P. enteric test. Monogramming on the tablets for identification remains easily identifiable under the filmcoat.

AUTHOR'S SUMMARY

CURRENT LITERATURE

. . . also calling your attention to the following articles appearing in recent hospital and pharmaceutical journals

. . . . . .

ADMINISTRATION

—Dispensing, Packaging, Labeling, and Storage

Anon.: Over 70% of Hospital Rx Men Stock Disposable Needles, *Am. Profess. Pharmacist* 27:52 (Aug.) 1961.

LITERATURE AND REFERENCE

Jeffrey, J. G.: Preparation of Articles for Publication, *Hosp. Pharm.* (Canada) 14:141 (July-Aug.) 1961.

MEDICAL SERVICE REPRESENTATIVES

Guild of Public Pharmacists (Great Britain): Conduct of Medical Representatives in Hospitals, *Public Pharmacist* (Great Britain) 18:192 (Aug.) 1961.

PARENTERAL SOLUTIONS

Sutaria, R. H.: The Use of a Metafilter in the Sterile Products Laboratory, *Public Pharmacist* (Great Britain) 18:198 (Aug.) 1961.

PHARMACY AND THERAPEUTICS COMMITTEE

(Includes Formularies, etc.)

Boyer, Francis E.: Generic-Names Drugs, *Drug and Cosmetic Industry* 89:164 (Aug.) 1961.

PUBLIC RELATIONS

Vivian, Douglas: Public Relations of Poison Information, *Hosp. Management* 92:84 (Oct.) 1961.

STANDARDS AND STANDARDIZATION

Nelson, Kenneth: Drug Control Standards for Nursing Homes, Professional Nursing Home (June) 1961.

DRUG EVALUATIONS

by the Council on Drugs of the American Medical Association

► DRUG EVALUATIONS as published by the Council on Drugs of the American Medical Association have been reprinted in the AMERICAN JOURNAL OF HOSPITAL PHARMACY regularly. In accordance with an editorial in the December 17 (1960) issue of the *Journal of the American Medical Association 174*:2066, the column formerly known as "New and Nonofficial Drugs" has been replaced by a new column under the name "New Drugs and Developments in Therapeutics." In this, a digest of monographs and drug evaluations will appear.

The monographs will continue to be made available and will be cumulated to appear in the Council's annual publication, *New and Nonofficial Drugs*. For the information of hospital pharmacists, reports made available by the A.M.A.'s Council on Drugs will continue to be published in this column.

The Index included in the February issue of THIS JOURNAL contained reference to those drugs published in the *Journal of the American Medical Association* between October 24, 1959 and December 17, 1960. These monographs were reprinted in THIS JOURNAL between February 1960 and January 1961. All appear in *New and Nonofficial Drugs 1961*, which is now available from either your local book store or from the publishers, J. B. Lippincott Company, Philadelphia, Pa. This makes up the annual compilation of available information on drugs, including their therapeutic, prophylactic and diagnostic status, as evaluated by the Council on Drugs of the American Medical Association.

For the convenience of readers of THIS JOURNAL, a listing of the monographs added to N.N.D. 1961 as well as the monographs omitted from N.N.D. were listed in the March issue of THIS JOURNAL. With that issue, publication of the new series was also started.

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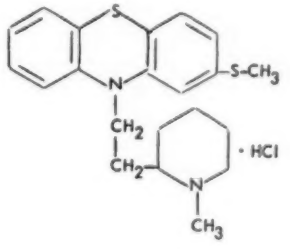
COUNCIL ON DRUGS

*A Council on Drugs' Digest**

New Drugs and Developments in Therapeutics

Thioridazine Hydrochloride — Mellaril®

THIORIDAZINE HYDROCHLORIDE (Mellaril) is a chlorpromazine-like phenothiazine compound used in the management of neuropsychiatric disorders. Probably no more effective than similar drugs now in use, but of interest because, of the serious side effects of other phenothiazine compounds, jaundice and agranulocytosis have not yet been reported, and extrapyramidal symptoms are rare.



2-Methylmercapto-10-[2-(*N*-methyl-2-piperidyl)ethyl]phenothiazine hydrochloride

Actions and Uses

Thioridazine hydrochloride is a member of the family of phenothiazine compounds, of which chlorpromazine is the prototype; unlike the latter, however, thioridazine is used only for the management of neuropsychiatric disorders. Its effectiveness in these conditions appears to be equal to but no greater than that of a number of other phenothiazine derivatives (see the monographs on chlorpromazine and related drugs in New and Nonofficial Drugs).

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*The above is the complete report as made available by the Council on Drugs of the Americal Medical Association. The Digest on Newer Antibiotics appeared in the *J. Am. Med. Assoc.* 176:112 (May 20) 1961.

Side Effects

Jaundice, agranulocytosis, photosensitization, or convulsive seizures have not yet been reported; pseudoparkinsonism and other extrapyramidal disorders have been observed but are rare. Drowsiness is not infrequent, especially with large doses. Dryness of the mouth, nasal stuffiness, gastric irritation, skin eruption, nocturnal confusion, and galactorrhea are noted occasionally.

Pigmentary retinopathy, which has been observed in patients taking large doses, is characterized by diminution of visual acuity, brownish coloring of vision, and impairment of night vision; examination of the fundus discloses deposits of pigment and, several weeks later, edema. To date, this syndrome has not been observed in patients receiving less than 1.6 Gm. per day; however, reversible impairment of vision, without detectable retinal changes, has been reported in a patient in whom the daily dosage was only 400 mg., but who, one month earlier, had received 1.2 Gm. per day for a period of 12 days.

Pharmacology

The major pharmacological difference between chlorpromazine and thioridazine hydrochloride are quantitative and include the lower potency of the latter with respect to antiemetic action, adrenergic blocking effect, interference with temperature regulation, and prolongation of thiopental sleeping time. Thioridazine has a lesser tendency to produce cataleptic behavior or to abolish conditioned avoidance responses.

Route of Administration

Oral.

Dosage

Milder Psychoneurosis and Emotional Disturbances: 30 to 75 mg. daily, in divided doses, initially; may be increased as required up to 200 mg. per day.

Major Psychoses: 300 mg. daily, in divided doses, initially; may be increased to as much as 400 mg. in ambulatory patients and 800 mg. in hospitalized patients.

Precautions

Since patients differ widely in their tolerance of and response to thioridazine hydrochloride, dosage must be carefully individualized. The drug should be administered with the caution appropriate with any new agent; patients should be carefully observed for the occurrence of the aforementioned serious toxic effects characteristic of phenothiazine compounds. Even though many of these complications have not been observed with thioridazine hydrochloride, the possibility that they may yet be seen should not be dismissed.

Preparations

Tablets 10, 25, 100 mg.

Commercial Sources

Sandoz Pharmaceuticals.

Year of Introduction—1959.

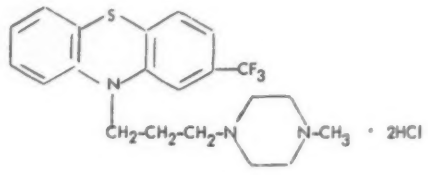
Evaluated by AMA Council on Drugs—June 15, 1960.

This monograph is included in the 1961 edition of the Council on Drugs' annual publication, *New and Nonofficial Drugs*.

Trifluoperazine Hydrochloride

Stelazine® Dihydrochloride

TRIFLUOPERAZINE HYDROCHLORIDE (Stelazine Dihydrochloride) is a phenothiazine compound used for the suppression of anxiety. Trifluoperazine hydrochloride is apparently equal in effectiveness to older chlorpromazine-like drugs; it has produced few serious toxic reactions with the exception of extrapyramidal disorders, which are frequent, at higher dosage levels.



10-[3-(1-Methyl-4-piperazinyl)propyl]-2-trifluoromethylphenothiazine dihydrochloride

Actions and Uses

Trifluoperazine hydrochloride, a highly potent phenothiazine derivative, is tentatively adjudged to be a useful drug in the treatment of acute and chronic psychoses in which anxiety is a major symptom; its value in psychoneuroses, psychopathic disorders, and psychosomatic conditions has not been clearly established. In its range of usefulness and clinical efficacy, trifluoperazine appears to compare favorably with other potent phenothiazine compounds, but a precise appraisal of its relative value cannot be made, since only a few of the numerous clinical trials of the drug have employed objective criteria of evaluation, adequate controls, or comparison with related drugs. Although the doses required for equivalent effects have been estimated variously as 1/10 to 1/25 of those required with chlorpromazine and 1/5 of those required with prochlorperazine, it should be recognized that smaller doses do not necessarily imply a higher order of clinical effectiveness or a greater margin of safety. Trifluoperazine hydrochloride has not yet been proved to be of value in (and may even make worse) depressive reactions, obsessive-compulsive reactions, and hysteria. Although some clinicians have reported improvement in the withdrawn schizophrenic patient, others have not observed any salutary effect.

Side Effects

There have been no confirmed reports of jaundice, agranulocytosis, and convulsive seizures, which are among the more serious side effects of phenothiazine compounds, with the use of trifluoperazine hydrochloride. Since they have been observed with related drugs, however, the physician should be alert for their occurrence. Hypotension has not been troublesome and, when encountered, it has been mild.

Extrapyramidal symptoms, on the other hand, occur frequently, when the drug is administered in the higher dosage range; for example, in one series of 104 hospitalized mental patients who received trifluoperazine hydrochloride, 56% of the men and 69% of the women developed these symptoms. However, the incidence is much lower when the dose does not exceed 8 mg. per day, and is about 2% when the dose is in the range of 2 to 4 mg. per day. These symptoms subside when the drug is withdrawn and often can be controlled by a reduction in dosage or by the concomitant administration of antiparkinsonism agents. Recognition of these symp-

toms is very important in order to avoid an erroneous diagnosis of tetany, tetanus, encephalitis, meningitis, or other neurological disorders. Extrapyramidal disorders induced by trifluoperazine and certain other phenothiazine compounds are of three types: (1) A parkinsonism-like syndrome with abnormal, shuffling gait, mask-like facies, postural abnormalities, rigidity, tremors, excessive salivation, and pillrolling movements of the hand. (2) Dyskinetic reactions, most commonly involving the muscles about the face and neck, and including perioral spasms, often with protrusion of the tongue, mandibular tics, difficulty in speech and swallowing, oculogyric crises, torticollis, hyperextension of the neck and trunk, and tonic and clonic contractions of other muscle groups; profuse sweating, pallor, and fever may accompany these symptoms, but consciousness is not lost and the patient remains fully alert. (3) Akathisia or motor restlessness, varying in intensity from a feeling of inner disquiet to inability to sit still or sleep, complete intolerance of inactivity, and an appearance of continuous agitation.

Exacerbation of the pain of angina pectoris has also been reported. This possibly may be explained by increased physical activity; however, until the mechanism is better understood, the appearance of this symptom should be regarded as an indication for withdrawing the drug.

Sedation is the most common minor side effect but is less severe than that caused by chlorpromazine and some other potent phenothiazine compounds. Skin eruption, dizziness, and weakness have occurred; blurred vision, excessive lacrimation, and lactation have also been reported with large doses.

Other central nervous system depressants should be administered with caution to patients receiving trifluoperazine hydrochloride; two bizarre deaths, apparently from respiratory failure, have occurred in patients who had received large doses of both trifluoperazine and a barbiturate or paraldehyde.

Pharmacology

Trifluoperazine hydrochloride is a phenothiazine derivative characterized by a trifluoromethyl substituent on the ring and, like prochlorperazine, a piperazinyl group in the side chain. Its major pharmacological effects resemble those of chlorpromazine. In addition to its effects on the central nervous system, trifluoperazine has potent antiemetic and weak adrenolytic actions but does not display significant antihistaminic, antispasmodic, or anticonvulsive properties. It is only 1/6 as active as chlorpromazine in prolonging sleep induced by hexobarbital.

Routes of Administration

Oral; deep intramuscular.

Dosage

For the treatment of less serious anxiety reactions, the initial dose of trifluoperazine hydrochloride is 1 mg. twice daily. Dosage is gradually increased until optimal levels are reached, usually 2 to 4 mg. daily.

In major psychoses, an initial oral dose of 2 to 5 mg. twice daily is suggested. The optimal daily dose for most patients is 15 to 20 mg., although a few may require as much as 30 mg. Intramuscular administration is recommended only when more rapid control of symptoms is necessary. The usual intramuscular dose is 1 to 2 mg. every four to six hours. Injections should not be made more frequently than every four hours because of the possibility of cumulative effects.

In children, trifluoperazine is recommended only for those who are psychotic or mentally defective and are either hospitalized or under adequate supervision. The initial oral dosage for children 6 to 12 years old is 1 mg. administered once or twice a day. Increases in dosage should be adjusted according to the size of the child and the severity of the symptoms. It is usually not necessary to exceed 15 mg. daily. Intramuscular administration is recommended only for rapid control of severe symptoms. The usual dosage is 1 mg. once or twice a day.

Precautions

Because of the high incidence of extrapyramidal disorders at higher dosage levels, patients receiving trifluoperazine hydrochloride should be hospitalized or under close supervision if the daily oral dose exceeds 8 mg. It should not be administered to comatose patients or those deeply depressed by other central nervous system depressants.

Precautions

Solution (concentrate) 10 mg. in 1 ml.
Solution (injection) 20 mg. in 10 ml.
Tablets 1, 2, 5, 10 mg.

Commercial Source

Smith, Kline & French Laboratories.

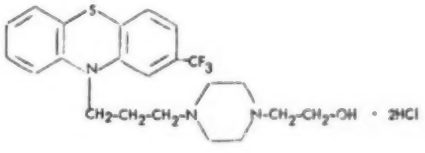
Year of Introduction—1959.

Evaluated by AMA Council on Drugs—August 10, 1960. This monograph is included in the 1961 edition of the Council on Drugs' annual publication, *New and Nonofficial Drugs*.

Fluphenazine Hydrochloride

Permitil®
Prolixin®

The present evidence suggests that FLUPHENAZINE HYDROCHLORIDE (Permitil, Prolixin), although equally effective in smaller doses, presents no significant advantage with respect to efficacy or toxicity when compared with a number of other piperazine-substituted phenothiazine compounds now in use. Particularly in the upper dosage range, the incidence of extrapyramidal disorders is high. Agranulocytosis attributable to fluphenazine hydrochloride has not yet been reported, and jaundice has rarely occurred.



10-{3-[-62-Hydroxyethyl)piperazinyl]propyl}-2-trifluoromethylphenothiazine dihydrochloride

Actions and Uses

Fluphenazine hydrochloride resembles other piperazine-substituted phenothiazine compounds in its actions and side effects, and in its usefulness for the management of mental illness characterized by anxiety and tension. (See the monograph on prochlorperazine maleate and related drugs in the New and Nonofficial Drugs.) Although fluphenazine hydrochloride is equally effective in smaller doses, it does not appear to present any significant advantage with respect to efficacy or toxicity when compared with a number of related compounds previously introduced.

Side Effects

Reported side effects include drowsiness, blurred vision, anorexia, epigastric distress, dryness of the mouth, urinary incontinence, and allergic reactions. As with other piperazine-phenothiazine compounds, the incidence of *extrapyramidal neurological complications* (pseudo parkinsonism, akathisia, and dyskinesia) is high. These appear to be dose-related phenomena and, hence, are most apt to occur with elevated dosage schedules. Transient leukopenia has been observed. In addition, patients should be observed for the appearance of other potential complications of phenothiazine therapy, including jaundice and agranulocytosis, although, as mentioned earlier, the latter has not yet been reported after the use of fluphenazine hydrochloride, and jaundice has rarely occurred.

Route of Administration

Oral.

Dosage

Adults: The proposed initial dose is 0.5 mg. daily for the management of *neuroses and emotional disturbances* and 2.5 mg. for *major psychoses*. Dosage then may be increased gradually, if necessary, but the total daily dose should not exceed 2 mg. in outpatients or 20 mg. in hospitalized patients. After symptoms have been controlled, smaller doses may be satisfactory for maintenance.

Geriatric Patients: Doses one-half of those described for other adults are suggested.

Children: Doses are not well established, but 0.5 to 1 mg. per day, in divided doses, have been proposed to initiate treatment; thereafter, dosage should be regulated in accordance with the patient's response and tolerance. Daily doses exceeding 2 mg. should be employed with caution.

Precautions

When fluphenazine hydrochloride and another central nervous system depressant are administered concomitantly, the dose of one or both may require reduction. Fluphenazine hydrochloride should not be given to patients receiving large doses of hypnotics; patients who have been taking the drug before undergoing surgery may require smaller than usual amounts of the general anesthetic.

Fluphenazine hydrochloride should be used with caution in patients having a history of convulsive disorders.

Preparations

Elixir (oral) 0.5 mg. per ml.
Tablets 0.25, 1, 2.5, 5 mg.
Tablets (delayed action) 1 mg.

Commercial Sources

E. R. Squibb & Sons (Prolixin)
White Laboratories (Permitil)

Year of Introduction—1959.

Evaluated by AMA Council on Drugs—August 24, 1960.

This monograph will be included in the 1962 edition of the Council on Drugs' annual publication, *New and Nonoffiical Drugs*.

Scientific data were supplied to the Council by Sandoz Pharmaceutical (thioridazine hydrochloride); Smith, Kline & French Laboratories (trifluoperazine hydrochloride); E. R. Squibb & Sons (fluphenazine hydrochloride, triflupromazine hydrochloride); and White Laboratories, Inc. (fluphenazine hydrochloride).

Triflupromazine Hydrochloride Vesprin®

Supplemental Evaluation by AMA Council on Drugs—August 24, 1960

Actions and Uses

TRIFLUPROMAZINE HYDROCHLORIDE (Vesprin) ameliorates such psychic symptoms as hallucinations and delusions and controls agitation, anxiety, tension, panic, hostility and aggressiveness in appropriate cases. It is also of value in facilitating rapport with the psychiatrist and making the patient more amenable to psychotherapy. The usefulness of triflupromazine hydrochloride in the management of minor emotional and behavioral disorders is similar to that of other phenothiazine compounds. The unsupervised use of triflupromazine or its use in ambulatory patients who cannot be carefully observed by the physician should be avoided. Triflupromazine exerts a significant antiemetic effect and is effective for the control of nausea and vomiting of varied etiologies.

In general, the over-all clinical toxicity of triflupromazine seems to be somewhat less than that of chlorpromazine.

Dosage

Triflupromazine hydrochloride is administered orally, intramuscularly, intravenously or rectally. Optimal dosage varies from patient to patient and should be determined on an individual basis. The initial dose may be increased gradually until a satisfactory clinical response has been obtained or until side effects become a problem.

For neuropsychiatric disorders in adults, the usual oral dose is 10 to 25 mg. twice daily for less serious emotional disorders and 50 mg. two or three times daily for major psychoses. For children, an oral dose of 10 mg. three times daily, or one 35 mg. rectal suppository twice daily, may be tried for less serious emotional disorders; a daily oral dose as high as 150 mg. may be necessary in major psychoses. For more rapid onset of action in severely agitated patients, the drug may be given intramuscularly in a daily dose of 60 to 150 mg. for adults or 0.2 to 0.25 mg. per kilogram (0.09 to 0.11 mg. per pound) of body weight for children. For geriatric patients the oral dose is 10 mg. three times a day.

For nausea and vomiting in adults the oral prophylactic dose is 20 to 30 mg. daily, or, rectally, 70 mg. twice daily. For children the daily oral prophylactic dose is 1 mg. for each year of age, but the total daily dose should not exceed 10 mg. Rectally, the dose for children weighing over 70 lb. is 70 mg. twice daily; for those weighing 40 to 70 lb., 35 mg. twice daily; and for those weighing 20 to 40 lb., 17.5 mg. twice daily. In severe nausea and vomiting, parenteral administration may be preferred. The dose for adults is 5 to 10 mg. intramuscularly or 1 to 3 mg. intravenously; this dose may be repeated after 4 hours, if necessary. For children, the drug may be given intramuscularly in a dose of 1 mg. per year of age, up to 10 mg. Oral therapy should be substituted for parenteral injection as soon as possible.

Preparations

Emulsion (oral) 10 mg. per cc.; solution (injection) 20 mg. in 1 ml.; suppositories (rectal) 35, 19 mg.; tablets 10, 25, 50 mg.

This revision of sections of the monograph is included in the 1961 edition of the Council on Drugs' annual publication, *New and Nonoffical Drugs*.

POSITIONS

in hospital pharmacy

PERSONNEL PLACEMENT SERVICE

The Personnel Placement Service is operated without charge for the benefit of hospitals and pharmacist members of the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. The ultimate purpose is the improvement of pharmaceutical services in hospitals, by more adequately fulfilling hospital pharmacy personnel needs and by locating positions which provide challenging opportunities for pharmacists who have indicated an interest in a hospital career.

By participating in the service, the hospital indicates a desire to achieve a pharmaceutical service which meets the *Minimum Standard for Pharmacies in Hospitals.* A description of the position should be submitted to the Division of Hospital Pharmacy on the forms provided. The hospital will receive applications directly from the applicant. The hospital agrees to reply to each application received and to notify the Division of Hospital Pharmacy when the position is filled.

The pharmacist, by participating, agrees to submit a Personnel Placement Service Information Form to the Division of Hospital Pharmacy. The applicant will then be notified of openings listed with the Service as they become available and can negotiate directly with the hospital if he is interested. It is agreed that the Division of Hospital Pharmacy will be notified as soon as a position is accepted.

A listing of positions open and wanted will be made regularly in the AMERICAN JOURNAL OF HOSPITAL PHARMACY without charge. Neither the name of the hospital offering the position nor the name of the applicant will be listed, except by code. All inquiries should be directed as shown above, including the code number.

Address all inquiries to

Division of Hospital Pharmacy
2215 Constitution Avenue, N. W.
Washington, 7, D. C.

positions open

STAFF PHARMACIST—600 bed general hospital. Duties include working in all areas of the pharmacy. Must have B.S. and be eligible for registration in Ohio. Forty hour week. PO-314

STAFF OR ASST. CHIEF PHARMACIST—300 bed general hospital located in Minnesota. Duties include filling orders for nursing stations and departments; also some bulk compounding. Must be registered and have several years hospital pharmacy experience. Forty hour week, liberal personnel policies. PO-313

STAFF PHARMACIST—175 bed general hospital located in the State of Washington. Must be registered. Forty hour week, liberal personnel policy. PO-312

DIRECTOR OF CENTRAL SERVICES—365 bed general hospital located in New Jersey. Duties include development and direction of a Division of Central Services encompassing Pharmacy Dept., central supply service, inhalation therapy, central equipment room, EKG, EEG, and storeroom. Must be registered with aM.S. degree and previous hospital supervisory experience. Forty hour week, liberal personnel policies. PO-311

ASST. CHIEF PHARMACIST—237 bed general hospital located in West Virginia. Duties include assisting in maintaining inpatient and outpatient prescription services. May also assist in teaching student nurses. Must be registered. Forty hour week, liberal personnel policy. PO-310

STAFF PHARMACIST—518 bed general hospital located in New Jersey. Duties include dispensing and compounding drugs, furnishing information concerning medications to physicians and nurses. Must be registered. Forty hour week, liberal personnel policy. PO-309

ASST. CHIEF PHARMACIST—225 bed general hospital. Duties include compounding and dispensing drugs and medications for hospital inpatients and outpatients. Must be eligible for licensure in Hawaii. Forty hour week, liberal personnel policies. PO-307

STAFF PHARMACIST—425 bed general hospital located in Illinois. Duties include dispensing drugs. Must be registered. Forty hour week, liberal personnel policies. PO-306

ASST. CHIEF PHARMACIST—327 bed general hospital located in Western North Carolina. Duties include assisting in all operations of the pharmacy and assuming full responsibility in absence of chief pharmacist. Forty hour week, liberal personnel policy. PO-305

ASST. CHIEF PHARMACIST—450 bed general hospital. Duties include supervising Inpatient Dispensing Laboratory; ordering drugs, some sterile preparations and limited bulk compounding. Must have M.S. and registration in California. Forty hour week, liberal personnel policy. PO-304

STAFF PHARMACIST—1000 bed general hospital located in Iowa. Duties include inpatient and outpatient service. Must have B.S. but need not be registered. Can serve internship for board requirements prior to registration. Forty hour week, liberal personnel policies. PO-303

STAFF PHARMACISTS—300 bed general hospital located in California. Must be registered. Forty hour week, liberal personnel policies. PO-302

ASST. CHIEF PHARMACIST—295 bed general hospital located in New York. Must be registered. Forty hour week, liberal personnel policies. PO-301

ASST. CHIEF PHARMACIST—324 bed general hospital located in Ohio. Duties include supervising, compounding, filling inpatient and outpatient prescriptions, and advising physicians and nurses regarding new drugs. Forty hour week, liberal personnel policy. PO-300

STAFF PHARMACIST—180 bed general hospital located in California. Duties include filling prescriptions for inpatients and outpatients, floor supplies for nursing stations and assisting chief pharmacist. Forty hour week, liberal benefits. PO-299

ASST. CHIEF PHARMACIST—1200 bed general teaching hospital. Duties include drug procurement; receipt; storage; prepackaging; compounding; issue and annual inventory of pharmaceuticals; maintaining records; supervising pharmacy function and administrative duties. Male required and eligible for New York registration. Forty hour week, extensive personnel policy. PO-298

CHIEF PHARMACIST—427 bed general hospital. Pharmacy staff consists of five pharmacists. Applicant must have M.S. degree and registration in Missouri. Forty hour week, vacation and sick leave. PO-292

CHIEF PHARMACIST—190 bed general short-term hospital located in Michigan. Duties include purchasing and dispensing drugs, assist in teaching student nurses. Hospital pharmacy experience. Forty-two hour week, vacation, sick leave and retirement plan. PO-280

STAFF PHARMACIST—280 bed general short-term hospital located in Texas. Duties include filling of inpatient and outpatient prescriptions, floor stock, and maintaining records. Must be registered. Forty hour week, liberal personnel policy. PO-279

STAFF PHARMACIST—300 bed general short-term hospital. Duties include inpatient and outpatient dispensing, bulk compounding and manufacturing, sterile preparations, and control. Male preferred. Must have B.S. and be eligible for registration in Michigan. Forty hour week, liberal benefits. PO-278

STAFF OR ASST. CHIEF PHARMACIST—300 bed general hospital. Duties include compounding and dispensing medicines, assisting in purchasing, maintaining records, furnishing information on medications. Must have B.S. and be eligible for registration in Indiana. Female preferred with experience. Forty hour week, vacation, sick leave, excellent personnel policy. PO-276

ASST. CHIEF PHARMACIST—212 bed general hospital. Duties include filling stock orders for nursing stations and other related duties. Must be registered in Illinois. Female preferred. Forty hour week, liberal personnel policy. PO-271

ASST. CHIEF PHARMACIST—130 bed general hospital located in Louisiana. Duties include compounding and dispensing drugs and related items, furnishing information to nurses and doctors, maintaining records, and assisting in purchasing and general management of the department. Forty hour week, vacation, hospitalization and sick leave. PO-270

ASST. CHIEF PHARMACIST—317 bed general hospital located in Delaware. Duties include assisting chief pharmacist in carrying out procedures and policies. Male preferred with internship; preferably M.S. degree. Forty hour week, vacation and liberal personnel policies. PO-254

STAFF AND ASST. CHIEF PHARMACIST—600 bed general hospital located in suburb of Chicago. Filling patient prescriptions. Forty hour week, excellent personnel policies. PO-252

STAFF PHARMACIST—237 bed general hospital. Duties include filling patient drug orders, outpatient prescriptions and assisting chief pharmacist. B.S. degree and registration in Iowa required. Forty hour week, vacation and sick leave. PO-250

STAFF PHAPMACIST—525 bed general hospital located in Ohio. Duties include filling prescriptions for patients, floor stock and clinic patients. Must be registered in Ohio. Forty hour week, vacation and personnel policies. PO-249

STAFF PHARMACIST—700 bed general hospital. Duties include dispensing drugs from the central and clinic pharmacies. Registration in Georgia required. Male or female. Liberal personnel policies. PO-245

STAFF PHARMACIST—520 bed general private hospital. Duties include compounding and dispensing medicines and preparations according to prescriptions. Female preferred. Must be registered or eligible for registration in Washington State. Forty hour week, vacation and other liberal benefits. PO-242

STAFF PHARMACIST—350 bed general hospital. Applicant will assume some supervisory responsibility. B.S. required. Must be registered or eligible for licensure in Ohio. Forty hour week, vacation, sick leave, holidays and group hospitalization. PO-235

CHIEF PHARMACIST—120 bed general hospital located in Kansas. Pharmacist will organize pharmacy and assist in teaching pharmacology to student nurses. Must be registered or eligible for licensure. Forty-four hour week, vacation and other liberal benefits. PO-230

STAFF PHARMACIST—550 bed teaching hospital located in Virginia. No experience necessary. Female preferred. Forty hour week, vacation and liberal benefits. PO-226

CHIEF PHARMACIST—Psychiatric hospital located in Ohio. Must be registered in Ohio. Forty hour week, vacation and retirement benefits. PO-221

CHIEF PHARMACIST—264 bed general hospital located in Texas. Plans and directs pharmacy policies, compounds and dispenses medicines, purchases supplies and materials, maintains records, and prepares periodical reports. Must be eligible for or have M.S. degree. Forty hour week, vacation, sick leave and insurance plan. PO-177

STAFF PHARMACIST—200 bed general hospital. Duties include compounding, dispensing and manufacturing. Applicant must have B.S. in Pharmacy and be registered in Connecticut. Recent graduate acceptable. Forty-four hour week, vacation, pension plan and hospitalization. PO-168

STAFF OR ASST. CHIEF PHARMACIST—150 bed general hospital located in New Mexico. Generous benefits. PO-134

positions wanted

ASST. CHIEF OR CHIEF PHARMACIST—Male, Single. B.S. obtained at University of Illinois in 1955. Three years' hospital pharmacy experience. Will locate anywhere. Registered in Illinois. PW-376

STAFF OR ASST. CHIEF PHARMACIST—Male, Married. B.S. obtained at University of Connecticut in 1957. Seventeen months' hospital pharmacy experience. Prefers to locate in New England States, preferably Connecticut or Southern Massachusetts. Registered in Delaware and Connecticut. PW-375

STAFF PHARMACIST—Male, Married. Presently working towards M.S. degree at Kansas University. Four years' hospital pharmacy experience. Prefers to locate in the West or Alaska. Registered in Kansas and Colorado. PW-374

STAFF OR CHIEF PHARMACIST—Female, Single. B.S. and Ph.C. degrees. Eight years' hospital pharmacy experience. Served hospital pharmacy internship. Prefers to locate in Florida. Registered in Florida and Puerto Rico. PW-373

STAFF PHARMACIST—Male, Single. B.S. obtained in 1955 at Rutgers' University, College of Pharmacy. Two years' hospital pharmacy experience while in U. S. Army stationed in France. Prefers to locate in New Jersey. Registered in New Jersey and New York. PW-372

PHARMACY DIRECTOR—Male, Married. B.S. obtained in 1959 at University of Texas. Prefers to locate in Texas. Registered in Texas. PW-371

ASST. CHIEF PHARMACIST—Male, Single, Pharm.D. Hospital pharmacy experience; extensive experience in manufacturing pharmaceuticals. Prefers to locate in the Philadelphia, Pennsylvania area. Registered in Pennsylvania. PW-370

CHIEF PHARMACIST—Male, Married. B.S. Served hospital pharmacy internship. Also has teaching experience. Will locate anywhere. Registered in Indiana. PW-369

ASST. CHIEF PHARMACIST—Male, Married. B.S. obtained at University of Kansas in 1960. Hospital pharmacy experience also experience in research. Will locate anywhere. Registered in Kansas. PW-368

STAFF OR ASST. CHIEF PHARMACIST—Male, Married. B.S. at University of Colorado in 1957. Will locate anywhere. Registered in Illinois. PW-367

CHIEF PHARMACIST—Male, Married. B.S. Nine years' hospital pharmacy experience. Will locate anywhere. Registered in Missouri and Illinois. PW-366

STAFF OR ASST. CHIEF PHARMACIST—Female, Single. B.S. One years' hospital pharmacy experience. Prefers to locate in the East or Texas. Registered in Iowa. PW-365

STAFF PHARMACIST—Female, Single. B.S. Served five months' hospital pharmacy internship. Will locate anywhere, preferably in the U. S. Registered in Province of Alberta, Canada. PW-364

ASST. CHIEF OR CHIEF PHARMACIST—Male, Single. Ph.G. Six years' hospital pharmacy experience. Prefers to locate in Maryland. Registered in Maryland, District of Columbia and Florida. PW-363

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1948. Thirteen years' hospital pharmacy experience. Prefers to locate in Midwest. Registered in Minnesota and Illinois. PW-359

CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1952 at Medical College of Virginia. Three years' hospital pharmacy experience. Prefers to locate in the Southeast. Registered in Virginia. PW-354

STAFF PHARMACIST—Male, Single. Obtained B.S. in 1951 at Detroit Institute of Technology. Hospital pharmacy experience. Prefers to locate in the Midwest. Registered in Michigan. PW-352

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1953. Seven years' hospital pharmacy experience. Prefers to locate in the West or Southwest. Registered in New York. PW-350

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1943. Hospital pharmacy experience. Prefers to locate in the South. Registered in Florida, Georgia and North Carolina. PW-345

CHIEF PHARMACIST—Male, Married. B.S. Served hospital pharmacy internship. Extensive hospital pharmacy experience. Prefers to locate in California. Registered in California, Massachusetts and Connecticut. PW-344

STAFF OR CHIEF PHARMACIST—Male, Married. Obtained B.S. and M.S. in 1950. Eleven years' hospital pharmacy experience. Prefers to locate outside continental U.S. Registered in Nebraska and Illinois. PW-340

ASST. CHIEF PHARMACIST—Female, Married. Canadian Citizen. Five years' hospital pharmacy experience. Prefers to work in an American hospital overseas. Registered in Canada. PW-338

CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1952. Hospital pharmacy experience. Prefers to locate in the West, Northwest, Kentucky or Washington, D.C. Registered in Kentucky. PW-337

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1954. Three years' hospital pharmacy experience. Prefers to locate in the West or East. Registered in Pennsylvania. PW-333

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. Obtained B.S. in 1960. Hospital pharmacy experience. Prefers to locate on the East Coast. Registered in Florida and Georgia. PW-331

CHIEF PHARMACIST—Male, Married. B.S. Hospital pharmacy experience. Will locate anywhere. Registered in New Jersey and Pennsylvania. PW-326

CHIEF PHARMACIST—Female, Single. Obtained B.S. in 1956. Five years' hospital pharmacy experience. Prefers to locate in the East. Registered in Florida and Georgia. PW-320

ASSOC. DIRECTOR OR DIRECTOR OF PHARMACY SERVICE—Male, Married. Obtained M.S. in 1960 at University of Michigan. Teaching and hospital pharmacy experience. Served hospital pharmacy internship. Will locate anywhere. Registered in Pennsylvania. PW-319

ASST. CHIEF OR CHIEF PHARMACIST—Female, Single. B.S. Five years' hospital pharmacy experience. Prefers to locate in the Midwest or East. Registered in Illinois and Ohio. PW-297

CHIEF PHARMACIST—Male, Married. B.S. obtained at the Philadelphia College of Pharmacy and Science in 1951. Nine years' hospital pharmacy experience. Prefers to locate in the North, Midwest or West. Registered in Pennsylvania and Delaware. PW-294

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. Obtained M.S. at Philadelphia College of Pharmacy. Served hospital pharmacy internship. Three years' hospital pharmacy experience. Prefers to locate in Connecticut. Registered in Connecticut and Pennsylvania. PW-290

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. B.S. obtained at University of Illinois. Extensive hospital pharmacy experience. Prefers to locate in the East or Midwest. Registered in Illnois. PW-287

ASST. CHIEF OR CHIEF PHARMACIST—Female, Single. B.S. obtained in 1956 at University of Wyoming. Working towards M.S. at the University of Maryland. Served hospital pharmacy internship. Hospital pharmacy experience. Prefers to locate in the West. Registered in Wyoming. PW-276

ASST. CHIEF OR CHIEF PHARMACIST—Male, Single. M.S. obtained in 1958 at University of Texas. Hospital pharmacy experience. Prefers to locate in the Southwest. Registered in Kansas and Texas. PW-270

ASST. CHIEF OR CHIEF PHARMACIST—Male, Married. B.S. received at Detroit Institute of Technology in 1950. Four years' hospital pharmacy experience. Prefers to locate in Michigan. Registered in Michigan. PW-224

STAFF PHARMACIST—Female, Single. B.S. Seven years' hospital pharmacy experience. Southwest section of country preferred. Registered in Alabama and Georgia. PW-199

CHIEF PHARMACIST—Male, Married. Graduate of St. Johns University College of Pharmacy. Extensive experience as chief pharmacist and purchasing agent. Prefers to locate in New York or New Jersey. PW-144

MEETING DATES

1961

November

Parenteral Drug Association Incorporated
Annual Convention, Statler Hilton Hotel, New York, N. Y., November 1-3.

Association of Military Surgeons of the U.S.
Annual Convention, Mayflower Hotel, Washington, D. C., November 5-8.

Specialized Institute on Hospital Pharmacy
American Hospital Association, Chicago, Illinois, November 6-8.

American Society of Hospital Pharmacists
Midyear Executive Committee Meeting, Lake Tower Motel, Chicago, Illinois, November 9-10.

American Public Health Association
Annual Meeting, Convention and Exhibit Building, Detroit, Michigan, November 13-17.

American Medical Association
Clinical Meeting, Denver, Colorado, November 27-30.

December

American Association for the Advancement of Science
Annual Convention, Denver, Colorado, December 26-31.

1962

January

Annual Clinical Hospital Pharmacy Seminar
State University of Iowa, College of Pharmacy, Iowa City, Iowa, January 21-24.

March

American Pharmaceutical Association Convention
(including Annual Meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS), Las Vegas Convention Center, Las Vegas, Nevada, March 25-30.

May

Catholic Hospital Association
Annual Convention, St. Louis, Missouri, May 18-24.

June

General Institute on Hospital Pharmacy
University of Colorado College of Pharmacy, Boulder, Colorado, June 25-29.

August

General Institute on Hospital Pharmacy
Duquesne University College of Pharmacy, Pittsburgh, Pennsylvania, August 13-17.

September

International Pharmaceutical Federation
Nineteenth General Assembly, Vienna, Austria,

American Hospital Association
Annual Meeting, Chicago, Illinois, September 17-20.

December

American Association for the Advancement of Science
Annual Convention, Philadelphia, Pennsylvania, December 26-31.

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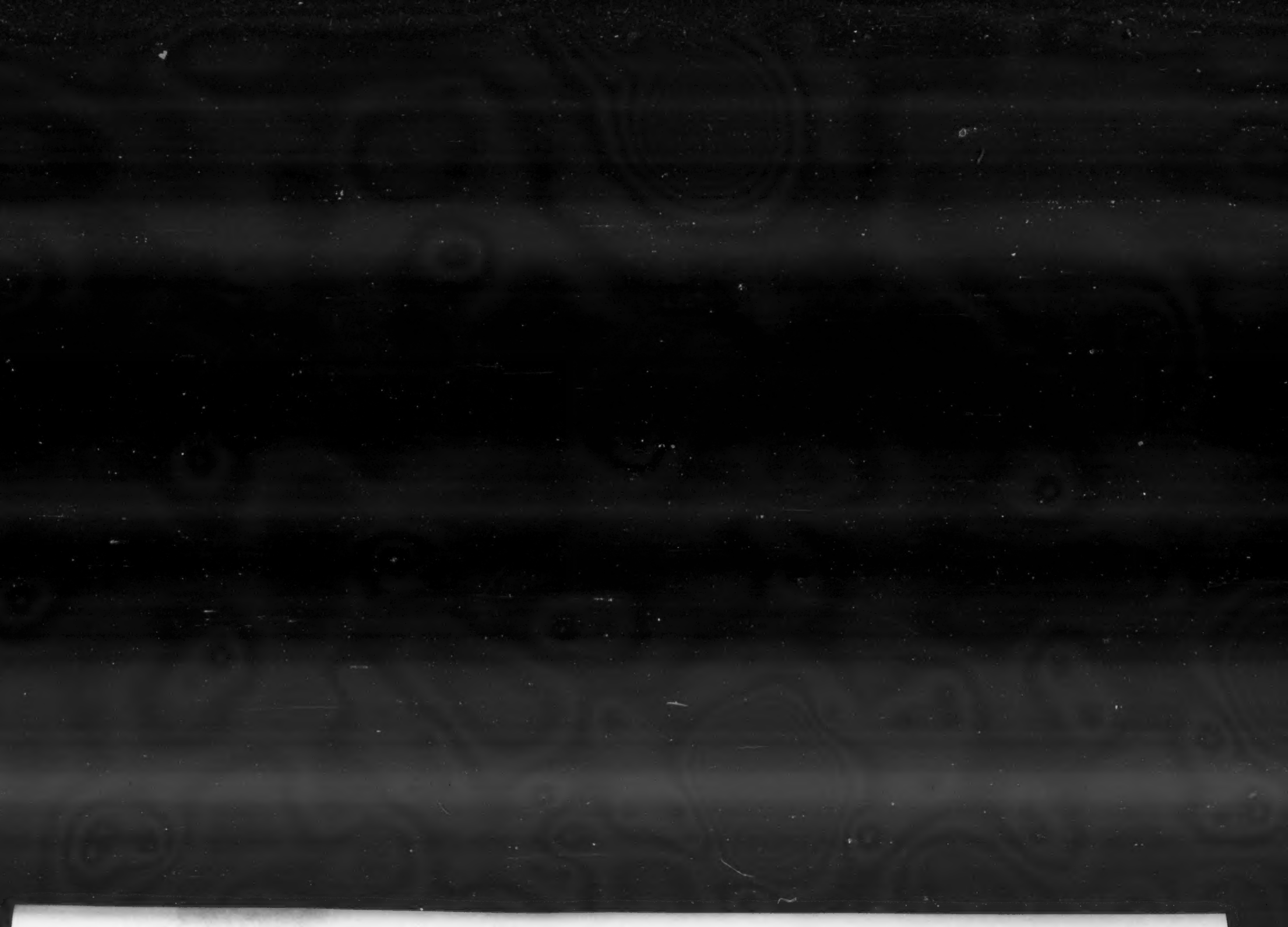
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